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Political Science

PAUL JENG

July was an exhausting month for anyone paying attention to the current presidential election. Like many other Americans, I lived the weeks surrounding the Republican and Democratic National Conventions as a news addict trapped in a cycle of abuse — cramming nearly every spare weekday hour with analysis, opeds, and internet commentary, crashing under a wave of hopelessness by Friday, and finally tuning out the world for the weekend to bingewatch fifteen episodes of HBO's *Veep* as a sort of politics nicotine patch. Come Monday, the pattern would start anew. In my mind I was fulfilling a civic duty to stay informed, but the entire experience was pretty harrowing.

It didn't take long for my politics habit to start impacting my day job. I zoned out while counting cells to listen to Terry Gross's interview with the *New York Time*'s Amy Chozick about Hillary Clinton's candidacy. I pretended to be reading protein expression data from *Nature* when I was actually reading polling data from FiveThirtyEight. Most notably, there was a distinct shift in mental priorities. After spending half a decade in graduate school studying only science, this suddenlyconsuming focus on the executive branch of the United States government felt like an unpleasant fugue state. Most people who are in research at any stage are there in part because of a belief that the world can be improved by the accumulation of objective truths, or at least our best approximation of truths based on scientific evidence. In that regard, politics, —which is in some ways the exact opposite of "objective"—would appear to have no seat at the science table. We have yet to figure out a way to quantify patriotism.

Natura Selection

A NEWSLETTER OF THE ROCKEFELLER UNIVERSITY COMMUNITY

In reality, the present and future of science are inextricably tied to government, both in terms of funding resources and research policy. The NIH invests over 30 billion dollars in medical research each year, financing roughly 300,000 researchers in more than 2,500 institutions throughout the nation. The recently-approved budget for fiscal year 2017 would increase this amount by \$825 million, a welcome change after a decade of funding that saw budget cuts in twelve of the past fourteen years. It's no secret that money for research project grants has been historically tight, especially following extensive sequestration of funds mandated by the Budget Control Act of 2011. The only way for the United States to remain a leader in science is if Americans elect officials that continue to prioritize spending in research.

For examples of how the executive branch can impact academics and science, one only needs to look back on the last years of the Obama administration. Notable accomplishments included Obama's \$300 million Precision Medicine Initiative, the White House Brain Research through Advancing Innovative Neurotechnologies brain-mapping project, and Vice President Joe Biden's \$1 billion Cancer Moonshot Project. Obviously, not all government-sanctioned science progress can be attributed entirely to the White House-the primary architects of the NIH's budget increases have been Republicans, most notably Senator Roy Blunt (R-MO) and Representative Tom Cole (R-OK) of the health spending subcommittee. However, the role of the President cannot be understated. On top of his or her duties as policy and decision making commander-in-chief, the president serves a symbolic duty as the personification of our country, a walking and talking avatar for our values and ideas. Obama, in that sense, has been a positive force for science since he pledged in his inaugural address to "restore science in its rightful place." It's critical for our next president, regardless of which party he or she may come from, to also be an ally of science.

That brings us to this current electoral race.

With only weeks to go before election day, Hillary Clinton has delineated a clear and factdriven platform on how she envisions the role of science in America's future, while Donald

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Trump has remained largely a black box. In an interview with Scientific American, Baylor College of Medicine's Dr. Peter J. Hotez described Trump's science policy as "conspicuous by its absence." Others, such as former Republican Environmental Protection Agency administrators William D. Ruckelshaus and William K. Reilly, have gone so far as to decry Trump's "profound ignorance of science and of the public health issues embodied in our environmental laws." For example, Clinton's website lists positions on nearly fourty issues, including stances on technology and innovation, Alzheimer's disease, autism, research for HIV/AIDS, reduction of opioid addiction, and environmental conservation. Trump's website, on the other hand, has only seven issues, headlined by plans for his Mexican border wall, with no hint of a scientific platform.

A brief look into Clinton's professional history will reveal a candidate that has been deeply interested in medical science for her entire career. Major milestones range from Clinton's efforts to raise funds for breast cancer research as First Lady, to her commitments as both a Senator and presidential candidate to continue support for embryonic stem cell research. Her large panel of health policy and science advisors includes Harold Varmus of Weill Cornell, former director of the NIH, and former President and CEO of MSKCC. Meanwhile, science appears to be an afterthought for the Trump campaign. One of his few on-record statements on medical science occurred on conservative commentator Michael Savage's radio show, where Trump was vaguely critical of government-sponsored research, saving, "I hear so much about the NIH, and it's terrible."

However, indifference is far from Trump's biggest problem. As demonstrated by his 2011 tenure as a mouthpiece for the spurious "birther" movement, Trump has shown a dangerous propensity to embrace pseudoscience and evidence denial. For one, he has repeatedly regurgitated the long disproven link between vaccines and autism, most recently at a CNN Republican primary debate from last fall. The only clinical research to ever make that connection derived from a single 1998 study published in The Lancet, which has since been debunked, retracted, and universally dismissed by the medical community. Yet that hasn't stopped Trump from posting tweets like, "I am being proven right about massive vaccinations-the doctors lied. Save our children & their future," from September 2014. To be fair, numerous politicians including Obama and Hillary Clinton expressed uncertainty about the issue back in 2008, but most have come around since then. In 2015, Clinton unambiguously tweeted, "The science is clear: The earth is round, the sky is blue, and #vaccineswork. Let's protect all our kids."

And then there's the matter of global warming. In 2016, the reality of climate change is a foregone conclusion to 97% of climate scientists and a growing majority of US citizens in both red and blue states. In fact, back in 2008 the GOP and Democratic presidential nominees had relatively closely aligned policies on this issue. Both Obama and McCain supported the reduction of greenhouse emissions, the development of alternative energy sources, and a cap-and-trade scheme based



The key quality of both a good scientist and a good political leader is the ability to objectively assess the evidence at hand and advance accordingly, not necessarily to have all the answers.

on a European model. In 2012, climate change was rarely discussed, with greater focus instead placed on oil and gas production. This year, all Democratic candidates and the majority of Republican candidates acknowledged man-made climate change, with party-line splits occurring primarily around policy and regulations. One could presume that a bipartisan consensus had coalesced in the intervening years around mounting scientific evidence. Unfortunately, that's not the case.

In a March interview with *The Washington Post*, Trump was quoted as saying he is "not a great believer in man-made climate change," consistent with his well-documented history of climate change denial. A visit to his Twitter history shows over 50 tweets Trump has posted over the past three years mocking man-made climate change as a conspiracy and a hoax (several of which were based on anecdotal experiences of personally-felt chilliness on traditionally warm days). These include statements such as "Ice storm rolls from Texas to Tennessee - I'm in Los Angeles and it's freezing. Global warming is a total, and very expensive, hoax!" from 2013.

The Clinton campaign, on the other hand, has made tackling climate change a central electoral priority. In her Democratic National Convention nomination acceptance speech, Hillary Clinton delivered one of her more striking applause lines with four simple words:

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"I believe in science." She followed up with "I believe that climate change is real and that we can save our planet while creating millions of good-paying clean energy jobs." As a major policy point, Clinton has pledged to maintain America's commitment to the International Paris Climate Change Agreement, whereas Donald Trump has promised to "cancel" it outright.

Of course, I have no delusions that the leader of the United States must be a PhD with total fluency in academic literature. In fact, I don't even need the president to be correct on every scientific issue. Scientists themselves are conditioned to be wrong at times, to expect experiments to fail, to have hypotheses disproven. The key quality of both a good scientist and a good political leader is the ability to objectively assess the evidence at hand and advance accordingly, not necessarily to have all the answers. Herein lies the most unsettling aspect of a potential Trump presidency. Hillary Clinton, although a thoroughly flawed candidate in her own right, has demonstrated the ability to evolve her positions based on new information, even admitting she was wrong on several issues ranging from same-sex marriage to the war in Iraq. Trump is buried in cement on the opposite end of the spectrum, refusing to apologize for missteps even in the face of conflicting evidence or near universal criticism (see: anti-Semitic retweet, Gold-star family, Judge Curiel, Ted Cruz's father, etc.).

This election year, Americans who value science must be wary of a candidate who treats fact like opinion and science like a partisan special interest group. This year, politics may not be scientific, but science is absolutely political. ■

The Science of Brexit

JOHANNES BUHEITEL

David Cameron looked tired but determined, as he took on the short walk from his front door to the podium opposite a battery of journalists that had congregated in front of London's 10 Downing Street. On June 24, England's Prime Minister announced that he will be stepping down from his post October as a consequence of the British people voting to exit the European Union (EU). Even though David Cameron went on to ensure that he will do his best to "steady the ship over the coming weeks" but that he will not be "the captain that steers [the United Kingdom] to its next destination", it is hard to shake off the feeling that he chose this metaphor for more reasons than he cares to admit in front of the cameras.

As the shockwaves of the Brexit decision rippled through the continent, they inevitably also reached the European scientific communities, which are left in shock and confusion about the future. Because, like so many others, they were not expecting this outcome. Three months before the referendum the renowned scientific journal Nature (based in London) reached out to over 900 active researchers in the UK to ask them about their feelings toward a possible Brexit. A whopping 83% wanted Britain to remain in the EU, a number that is almost double that of the polls among the general population at that time. Most of these researchers explained their vote with the belief that Brexit would harm UK science, which, given the extensive ties between European scientific communities and the EU, seems very likely. According to Times Higher Education, UK universities have received roughly 1.4 billion euros (1.5 billion US dollars) of funding from EU programs per year; funding, that is bound to dry up once Brexit has been completed. Whether this impending gap can be filled by the UK's domestic budget is unclear. It is specifically this state of limbo that makes UK researchers worry the most. Not even the EU's Science Research and Innovation Commissioner, Carlos Moedas, has many words of solace to offer and notes that "all implications [...] will have to be addressed in due course"

But it's not only funding that worries UK researchers. Brexit could pose new moving and working restrictions for non-British EU nationals, which make up about 15% of the UK's scientific community. The upcoming Brexit negotiations will determine whether they will be allowed to stay and work in the UK but the more important question might be, do they want to? In addition to the wor-



ries about EU funding in the aftermath of the referendum, there have been reports about xenophobic incidents at British research institutions such as the Royal Society of Chemistry, where some of the staff were told to "go home."

Apart from principal investigators and postdocs, Brexit also has students looking towards an unclear future. Since the inception of the EU's student exchange program ERASMUS, the UK has been one of the prime destinations for students from all over Europe. UK's exit from the EU will very likely not only mean that fewer foreign students will come to Britain but also deprive future generations of its students (about 200,000 British students have benefited from ERASMUS so far) from the educational and cultural experience that the ERASMUS program stands for. These foreign academics helped to generate 37.000 local jobs and around 3.7 billion pounds sterling (4.8 billion US dollar) for the UK economy from 2012-2013 alone, according to Universities UK.

At the moment, we can only speculate as to exactly how Brexit will play out for scientists in the UK and the rest of Europe. But we know that the remaining EU member states have no intentions of making the transition particularly easy for the UK as, has already been implied by leading politicians. Moreover, not too long ago, the EU demonstrated strong determination for maintaining their values when the people of Switzerland (a non EU-member, who maintained extensive relations with the EU) decided to introduce strict immigration quotas. You can read more about how these actions affected Switzerland's access to EU-based science funding in an accompanying article in this issue of Natural Selections by Juliette Wipf. The only thing that seems almost certain, is that this vessel will be in for a rough ride, but more troublingly, that its very own captain does not want to be caught on it, in case it sinks.

How the approval of the "Against Mass Immigration" initiative threatens science in Switzerland

JULIETTE WIPF

Over the last decade, nationalist and anti-immigration parties have gained voters throughout Europe (Front National, Golden Dawn, Alternative für Deutschland, Lega Nord, and many more). Brexit is not the first case where citizens have decided in favor of legislation that jeopardizes international academic cooperation. In Switzerland, scientific collaborations are at stake after the passage of an initiative launched by the national-conservative and right-wing populist "Swiss People's Party." The initiative, entitled "Against Mass Immigration," threatens the free-movement policy of the Schengen area (a group of EU and non-EU European countries with an agreement of free movement). In response, the European Union has expelled Switzerland from mutual science and exchange programs. To date, Swiss scientists are still in fear of the consequences resulting from the implementation of this initiative.

Free movement inside the Schengen area

Switzerland, <u>Liechtenstein</u> and <u>Norway</u> are not part of the EU, but have signed the Schengen Agreement. Together with the EU-member states, those countries therefore form the Schengen area. Inside this area, border controls have been abolished and the principle of free movement is pursued, which immensely aids scientific exchange in Central Europe.

Horizon 2020

As the biggest EU Research and Innovation program ever created, Horizon 2020 made nearly 90 billion dollars of funding available to researchers between 2014 and 2020. The aim of the project is to further develop the European Research Area and to "break down barriers to create a genuine single market for knowledge, research and innovation." Non-EU countries inside the Schengen area take part in EU projects such as Horizon 2020, and Switzerland plans to contribute 4 billion dollars to the project.

The "Against Mass Immigration" initiative

Switzerland's semi-direct democracy is unique and practices direct democracy in parallel with the representative democracy voting system. A vote can be organized by the people to oppose any law newly accepted by the Federal Assembly, as well as to modify the existing constitution with a so-called initiative. In



2011, the "Swiss People's Party" launched the "Against Mass Immigration" initiative, aiming to limit immigration through quotas. Even though no number was specified for such a quota, the idea stands in stark contrast to the free-movement policy of the Schengen area. The party's arguments fueled the fear of unemployment, the financial crises and the refugee flow. These arguments are similarly exploited by many other nationalist parties in Europe or other people who would like to secure their countries by building walls. Unfortunately, Swiss citizens approved the initiative with a narrow majority of 50.3% in 2014.

Immediate effects of the initiative

In response to the vote in favor of this initiative, the EU excluded Switzerland from Horizon 2020 and the EU student exchange program "Erasmus." Luckily, an interim solution was defined and international projects could be continued. The decision for Erasmus, on the other hand, was final.

The current state

According to the law of the Swiss democracy, the "Against Mass Immigration" initiative must be incorporated in the Swiss constitution by 2017. How this new law will be implemented is uncertain. At the same time, Switzerland recently signed the "Protocol on the Extension to Croatia of the Free Movement of Persons Agreement between the EU and Switzerland." This protocol secures free movement with Croatia, the newest EUmember state, and the Schengen country Switzerland. The two legislative decisions are as contradictory as can be, and even inside the Swiss Federal Council, opinions are divided on how the two can be in effect at the same time. The EU has clearly defined their expectations: if Switzerland does not get the Croatia Protocol ratified by 2017, its participation in Horizon 2020 will be terminated.

In the meantime, Swiss researchers and students are anxious and angry. So far, they have been the only ones affected by the scare tactics of the "Swiss People's Party." To quote Swiss science lobbyist Andrea Degen; "In science and development, real innovations can only come about when international knowledge is combined. You can swing around your cowbell in a mirror all day long—it will still happen! You can't stop it!" ■

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Twenty-four visits to Stockholm: a concise history of the Rockefeller Nobel Prizes

Part XXI: Paul Nurse, 2001 Prize in Physiology or Medicine JOSEPH LUNA

All cells, in the end, are copies of copies. But unlike the loss of quality in the Xerox sense of making a copy, a cell needs to be perfect. It must faithfully and exactly duplicate its genetic information, gather extra membranes, energy and microtubules, and then begin a dramatic line dance to separate its two genomes during mitosis. This entire process known as the cell cycle—ensures the timely and correct reproduction of cells that is crucial for the growth of any organism.

But from the time of Virchow's famous 1850s epigram that all cells come from cells (*Omnis cellula e cellula*) through the birth of molecular biology in the 1950s, all a biologist could do was watch this central process of development. The awesome molecular logistics that made the cell cycle so precise and ordered were a mystery. Who, from a molecular perspective, was in charge? How did a cell know when to execute a particular phase of the cell cycle? These questions weren't just idle puzzles, for by this time it already been suggested, that many cell proliferative diseases such as cancer might be manifestations of cell cycles gone horribly wrong.

In 1974, a young post-doc named Paul Nurse set out to explore the cell cycle in fission yeast (Schizosaccharomyces pombe). Fresh from earning his PhD, Nurse spent half a year learning the genetics of Sz. Pombe with Urs Leopold before joining the laboratory of Murdoch Mitchinson, a pioneer of fission yeast genetics in Scotland. Nurse was inspired by the work of Leland Hartwell, who devised a way to isolate mutants of budding yeast (Saccharomyces cerevisiae) that were stuck in their progression through the cell cycle. Because such mutations were lethal, Hartwell relied on a quirk of yeast genetics that permitted temperature sensitive mutations: the yeast divided normally at lower permissive temperatures, but at higher temperatures, mutations would become apparent, and were usually lethal. Through the painstaking work of taking time-lapse photographs of many yeast mutants, Hartwell identified dozens of cell division cycle (cdc) mutants, each displaying a distinct problem in their cell cycle.

Nurse decided to apply a similar approach to rod-shaped fission yeast, which on paper, seemed tailor-made for such studies. Unlike budding yeast, fission yeast grows at a fixed diameter, and cells partition automatically once lengthened to roughly double their size. Nurse figured that cell cycle mutants would be unable to separate, and so should yield lengthened rods that were whole multiples of a single cell. Reasoning that such mutant cells were heavier, Nurse had the bright idea of trying to isolate them with a centrifuge instead of laboriously screening with the microscope.

The problem was that it failed spectacularly. The proposed mutants showed up but weren't faulty for a specific gene in their cell cycles; Nurse's new procedure actually vielded less cdc mutants than random visual screening. Instead, Nurse noticed something totally unexpected: microcolonies composed of small cells, much tinier than the normal rod shaped yeast. It was yet another annoying confirmation that his scheme to enrich for larger cells had failed. In frustration, in desperation, in defiance, in blind hope, or some combination thereof, he next had a truly wild idea. What if the small cells were small because they were dividing too quickly? In one fell swoop, Nurse reimagined these small cells as deficient in a step of the cell cycle that normally controls the overall rate of cell reproduction.

He named this first mutant wee (a Scottish word for small) and by chance it happened to be temperature-sensitive. By shifting temperatures of weel mutant cells at various stages of the cell cycle, Nurse worked out that weel controlled entry into mitosisa surprising finding, since most thought that the cycle was controlled at a much earlier step known as G1. Bolstered by these results, Nurse set out to find other cell cycle genes mutated in wee cells.

More frustration ensued: he isolated 47 wee mutants that were all the same as wee1. But on the 48th try, Nurse isolated a new mutant, and named it wee2. Unlike wee1 cells, where the loss of a gene allowed the cells to divide more rapidly, wee2 cells accomplished the same rapid division due to an activating gene that was now hyperactive. Such a gainof-function mutation could be expected to be rare. Fine genetic mapping soon gave a real surprise in that wee2 corresponded to one of Hartwell's budding yeast mutants called cdc2. Here now were two very different mutants of the same gene in related organisms: Hartwell's loss-of-function cdc2 mutant that halted the cell cycle, and Nurse's wee2 mutant of the same gene that put the cell cycle in overdrive. Such odd behavior suggested that cdc2 was a critical regulator of the en-



Photo Courtesy of THE ROCKEFELLER UNIVERSIT

tire process. Formal confirmation that wee2 and cdc2 were the same came from complementation studies, where the mutant was rescued by re-introducing the normal gene. In the pre-PCR (polymerase chain reaction) era, this was laborious and heroic work. But once confirmed, it set the stage for key experiments aimed at determining whether this whole exercise was unique to yeast, or if it applied to all eukaryotic cells.

Now with his own lab, Nurse and his post-doc Melanie Lee sought to determine if human cells had a version of cdc2. The approach they eventually settled on can only be described as crazy: rescue the yeast cdc2 defect by re-introducing the human version, if there was one. With an estimated 1.5 billion years of evolutionary divergence between humans and yeast, this was a highly unlikely proposition. But if true, it would strongly suggest that cdc2 was so critical that its function had been preserved for billions of years. The risky gamble paid off. Lee and Nurse succeeded in getting broken yeast cells to divide by using the human version of cdc2, but the conclusive eureka moment came one day in front of a computer screen. After ruling out possible confounding explanations for the rescue experiment, Lee and Nurse sequenced the human cdc2 and compared it to the yeast version. Their protein sequences were 60% identical, and differed in length by one amino acid. Such evidence confirmed that these distant cousins were functionally equivalent despite a huge evolutionary distance. Countless cell divisions in innumerable organisms could be said to rely on a cdc2 molecule.

Weightlifting at the 2016 Rio Olympics

FRANCESCA CAVALLO

Rio de Janeiro, Brazil was selected to host the 2016 Olympic Games, the first time the host nation has been in South America. The 2016 Olympic Games opened on the August 5 and closed on the August 21, to coincide with the start of the host country's soccer season. These Olympic Games are the 31st edition of the Summer Olympics, and four competition zones were assigned as sporting venues: Barra, Deodoro, Maracaña, and Copacabana. Fourty-eight are track and field sports and twenty-eight the total sports; among them we have two new categories: golf and rugby sevens. 205 countries are competing for the 306 medals on offer.

In particular, weightlifting has been assigned fifteen medals: eight for the male category and seven for the female category.

During these Olympics, weightlifting has become a very controversial sport because of the prevalent doping issues involved. *The Comité International Olympique* (from the original French name CIO) had to ban over forty athletes from various countries including Armenia, Ukraine, Moldova, North Korea, Cyprus, Turkey and Kazakhstan.

Unfortunately, this issue has been around for a while. At the last world championships, in 2014, there were twenty-four positive for doping tests in the first thirty positions.

A re-examination of Beijing's 2008 and London's 2012 Olympic weightlifting drug tests found 20 more doping-positive athletes, including four Olympic champions. The empty seats and the crowd's displeasure, were therefore not a surprise at the current Olympics. The mistrust can be said to be warranted due to the previous examples of drug cheating.

August 16th was the last day of the Rio heavyweight competition. Georgian, Lasha Talakhadze, won the gold medal and he now holds the world and Olympic records of 473 kg, previously held by Iranian Hossein Rezazadeh since the Sydney 2000 Games. Talakhadze lifted 215 kg in the snatch and 258 kg on clean and jerk. He benefited from the disappointing performance of Behdad Salimikordasiabi, who was able to achieve the snatch world record (216 kg), but failed at 245 kg in the clean and jerk category in three attempts.

Talakhadze also beat Armenian Gor



Minasyan, who lifted 451 kg in total (210 kg snatch and 241 kg on clean and jerk). In the meantime, the Georgian celebration was completed by Irakli Turmanidze who claimed the bronze medal (207 kg for snatch and 241 kg clean and jerk). In fourth position was Armenian Ruben Aleksanyan (440 kg), followed by Brazilian Fernando Saraiva Reis (435 kg) in fifth position.

Most of us are amazed by the strength and skill of weightlifters, but what exactly is weightlifting? What do they mean when they mention the snatch and the clean and jerk?

Weightlifting is a sport in which the athletes lift weights loaded on a barbell. Weightlifting competitions have been in existence since ancient times and have been a part of the modern Olympic Games since the first edition in Athens in 1896. From the 1950s to 1980s, most of the weightlifters originated from Eastern Europe, particularly from Bulgaria, Romania, Poland and the Soviet Union. Since then, weightlifters from other nations including China, Greece and Turkey have dominated the sport and the nations with the best athletes at the current Olympic Games have included those of Russian, Bulgarian and Chinese heritage. Female weightlifting started to spread in the 1980s and was added to the Olympic program in the year 2000.

Right now there are two types of

weightlifting:

• Snatch: In this category, athletes have to lift the barbell from the ground to overhead in one motion. There are four main styles: squat snatch, split snatch, power snatch and muscle snatch. The squat snatch and split snatch are the most common styles used in competition while power snatch and muscle snatch are mostly used for training purposes.

• Clean and Jerk: During the clean, the lifter moves the barbell from the floor to a racked position across the deltoids and clavicles. During the jerk, the lifter raises the barbell to a stationary position above the head, finishing with straight arms and legs, and the feet in the same plane as the torso and barbell.

Weightlifting is controlled by the International Weightlifting Federation (IWF), established in 1905, its headquarters are in Budapest, Hungary. Three judges evaluate the correct exercise execution. If the athletes have completed the exercise, every judge illuminates a white light. When at least two lights are turned on the lift is considered correct and the athletes can throw the barbell on the floor. If the judge thinks that the athlete has not completed the exercise correctly, a red light will turn on. Moreover, the lift has to be completed within a certain time, otherwise it is considered invalid.

Culture Corner

An interview with art gallery owner David Tunick

BERNIE LANGS

David Tunick Inc. is an art gallery located at 13 East 69th Street, specializing in fine prints and drawings from the 15th to the mid-20th centuries. The gallery boasts high quality and rare examples of works by Rembrandt, Dürer, Goya, Fragonard, Matisse, Picasso and many others. David Tunick, the gallery president, has been active in the field of works on paper since 1966. Mr. Tunick kindly agreed to answer email questions for *Natural Selections*.

BL: The information you provide for each Old Masters (and other) prints is detailed and exhaustive. Not only must you research the history of the physical print and the artist, but trace its provenance as well. How do you undertake such background work?

DT: We work at it, but some discoveries are luck. If by provenance, you mean its actual meaning, the history of ownership, we go about it carefully and methodically. We take note of every collector's stamp, mark, notation, scribble, etc. on the recto and verso of the sheet. Can we identify them if we don't know them? To do that we go to Lugt, Les Marques de Collections de Dessins et d'Estampes both in the old two volume hard copy and the augmented online version. If a mark is in there—there are thousands- we read about it, and that may lead to other sources. We want to add to our description of every print and drawing that comes in as much in the way of ownership history as possible. Sometimes that means looking in old gallery or sales catalogues, or correspondence with a museum, more often with a former owner or gallery owner, to see if there are further records in old files. Here's an example of the luck part: recently a man unknown to us called me from France. He had seen an important 1950 Leger gouache on our website that had turned up on the wall of old master drawing collectors here in NY. It had been "missing" since 1971, when it was last seen in public in an exhibition at the Grand Palais in Paris. The NY collectors asked us to sell it for them, and we were thorough in researching the provenance, but there were gaps. The man from France said he remembered seeing this Leger on his aunt's wall when he was a child. He filled in all the blanks, which we went on to verify. It felt good, as if we had fulfilled a responsibility, in a way, to the work of art.

BL: Rembrandt and Dürer, both wellrepresented by the Tunick Gallery, are masters of the art of the print. Do you have personal



David Tunick

favorite artists and particular favorite prints?

DT: You just named my favorite artists. Instead of going straight to graduate school, I had the fantastic experience of working in the print department at the Metropolitan Museum for two years within a short time of graduating as an art history major from Williams, where I had been introduced as a student to prints and drawings in the classroom by a remarkable triumvirate of professors led by the great Lane Faison. At the Met, more or less under the

The battle I have fought my entire career is getting students and collectors who consider prints poor second cousins to understand how prints are at the core of the work of so many of the great painter-printmakers, from Dürer and Rembrandt to Picasso, Warhol, and Johns.

tutelage of Hyatt Mayor, a gentleman giant in the field, I was asked to fill in gaps in the cataloguing of their Dürer engravings my first year, and their Rembrandt etching collection my second year. It was very heady stuff for a twenty-two-year-old. Before I knew it, curators from all over the museum were coming to me to ask questions about the museum's Dürers and Rembrandts, ranging from issues of provenance to whether we should lend certain ones to exhibitions in Berlin and London. But mostly I sat there every day looking at the prints really hard, every line and stroke, and comparing impressions to determine relative quality. Dürer and Rembrandt are very different. Dürer, the greatest artist of the Northern Renaissance, executed masterpiece engravings like the *Adam and Eve* and *Knight*, *Death, and the Devil*, the woodcut of *The Four Horsemen of the Apocalypse*, all with a cool, meticulous precision. Rembrandt two centuries later— anything but cool and meticulous: etching perhaps the most anyining but cool myining but cool psychologically penetrating and moving portrayals of the human condition in Wast and beggars to his most important graphic masterpieces, the large plates of The Three Crosses and the Ecce Homo, The Hundred Guilder Print, The Three Trees and the other sublime landscapes. Their approaches were so different. Dürer rarely did it over again; first off was last off-a Germanic kind of assuredness and finality. Rembrandt could hardly keep his hands out of the ink and off a plate. Many of his prints go through multiple changes (called states); he was constantly wiping the plates in different ways, creating tonal effects, simulating different times of the day or different weather, different moods. Prints were not identical multiples; each was a variant, a unique work of art. I have to add that I have had similar lifelong love affairs, the same kind of "shock and awe" sense of wonderment for the genius of Goya, Degas, and Picasso as printmakers. The battle I have fought my entire career is getting students and collectors who consider prints poor second cousins to understand how prints are at the core of the work of so many of the great painterprintmakers, from Dürer and Rembrandt to Picasso, Warhol, and Johns. The greatest prints are not reproductive of paintings; they are

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independent works of art, just as Shakespeare wrote plays and sonnets and Mozart wrote operas and symphonies. They are a way to articulate ideas that cannot be expressed in any other form.

BL: Artists such as Martin Schongauer, Lucas van Leyden, or the mysterious Master E.S. remain as brilliant examples of the print genre but not as recognizable to the general public as Durer and Rembrandt. Does the market remain strong for them? Are there many new collectors who still value their prints?

DT: This past year we sold a brilliant large, valuable engraving by Lucas van Leyden to a new American collector in only her second or third year collecting. She was swept away as soon as she saw the Lucas in the gallery. I'm not sure she knew who Lucas van Leyden was, but she has a terrific eye and is smart as a whip. With the strong encouragement of a local esteemed curator in one of the major museums, she closed a deal with us within a week or two-and by then she knew a lot about Lucas. It's hard enough getting a fine Lucas van Leyden, who worked in the sixteenth century. It's nearly impossible to get a truly fine Schongauer much less a Master E.S. Both of them worked a century earlier, and E.S. in particular is beyond rare. Whenever we've had a top Schongauer, it's been out the door practically before it's come in.

BL: You have been a gallery director for decades. Is there any wisdom you would pass along to someone trying to break into the field today?

DT: Whenever a young person comes to me and asks what's the key to success in the art business, I tell him or her that every successful dealer I know has done it their own way, taken their own path. There is no one sure-fire formula. Gagosian started selling posters on the street corner. I started by driving campus to campus with my St. Bernard dog in a Volvo station wagon with consigned contemporary prints by artists of little reputation, setting up one-day sales exhibitions spread out on tables. I do think that a solid grounding in history, art history, and some languages, particularly French and German, are helpful. There's no easy, fast track, no overnight sensations. It takes hard, hard work, commitment, and dedication. And I always tell people thinking of going into the field to be mindful of the fact that there are thousands of art dealers, and only a tiny sliver of a fraction are truly successful.



NEW YORK, NY

This Month Natural Selections Features Leslie Diaz, Associate Director CBC

INTERVIEW BY GUADALUPE ASTORGA



How long have you been living in the New York area?

My entire life. I grew up in the old Williamsburg area, in the pre-hipster era. I've always been a New Yorker born and raised.

Where do you currently live? Which is your favorite neighborhood?

I currently live on the Upper East Side, and my favorite neighborhood is Williamsburg because I have so many fun memories from growing up there.

What do you think is the most overrated thing in the city? And underrated? For me the most overrated is Times Square. I think there are too many tourists and it's almost impossible to walk around. I also think the quality of the restaurants there is terrible. Underrated, I think, the Bronx Zoo in winter. This is the absolute best time to see in action all of the cold weather animals, such as the polar bears, Siberian tigers and Snow Leopards. The Siberian tigers playing in the snow are a MUST see. Best of all, the zoo is usually empty so you have the entire park to yourself and you can treat yourself to a hot chocolate at the Dancing Crane Café.

What do you miss most when you are out of town?

NY is the city that never sleeps, there is easy access to public transportation 24/7, access to restaurants, and even clothing stores are open until late hours. I've never been able to find this convenience in any other city.

If you could change one thing about NYC, what would that be?

There are many beautiful luxury apartments nowadays, but they are displacing many of the native New Yorkers due to the expensive living costs. So, it would be great if the city could support affordable housing so that NYC can continue to accommodate a diverse population.

What is your favorite weekend activity in NYC?

I love summers in NYC, walking around, stumbling on street fairs, block parties, you never know what fun activity is waiting for you.

What is the most memorable experience you have had in NYC?

Growing up here I remember many experiences as a child, from playing handball in the city parks and getting wet during the heat wave, to barbeques on the city streets. I truly feel blessed for being able to grow in the best city in the world.

Bike, MTA or WALK IT???

Walk it first, but then MTA.

If you could live anywhere else, where [would] might that be?

Maybe Miami, but I would probably eventually come back to NYC.

Do you think of yourself as a New Yorker?

Definitely, born and raised, I will always be a New Yorker. ■

QUOTABLE QUOTE

"Let us all resolve: First, to attain the grace of silence; Second, to deem all fault-finding that does no good a sin...Third, to practice the grace and virtue of praise."

Harriet Beecher Stowe 1811-1896



Stronger Together!

GEORGE BARANY AND FRIENDS

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This politically themed puzzle comes to you from a consortium of progressivelyminded friends of Rockefeller alum (1977) George Barany, who is currently on the faculty of the University of Minnesota-Twin Cities. For more about this specific puzzle, including a link to its answer, visit here. More Barany and Friends puzzles can be found here.

Across

- 1. Guinness who played Obi-Wan Kenobi
- 5. Piece of Gail Collins' mind
- 9. Controversial cab alternative
- 13. Bohr or Borge
- 14. Election contest, e.g.
- 15. Fear-mongerer's feelings
- **16.** Secretary campaigning in 2016 for a promotion
- **19.** Word before and after "baby," in a Sarah Palin slogan
- **20.** They play ball in New York
- 21. "____ Got a Secret"

23. Magician's cry

25. Rodeo ropes

- **28.** "When there are no ceilings, ____"
- (optimistic vision from 16-Across)

32. José or Francisco's leader?

33. Consigns, as the nuclear launch codes, say

34. Besides

- 36. It's frozen in Frankfurt
- 37. Kids' guessing game

41. Gourmet burger chain with a bird mascot

- 46. Dessert choice, especially on March 14
- 47. Kate Smith's signature song (and
- patriotic closing words for 16-Across)
- **51.** Bad atmosphere, as in a brutal political campaign

52. Innovative

- 53. Like a fox, it's said
- **54.** Force in the OJ trial spotlight
- 57. Faith for Ghazala and Khizr Khan
- 60. Apropos sound bite from 16-Across
- 64. Old Peruvian
- 65. Calculus calculation
- 66. Sikorsky or Stravinsky
- 67. Okla. or La., once
- **68.** Give a little
- **69.** ____ Le Pew

Down

- 1. Condition treated with Ritalin, briefly
- 2. Hideaway
- 3. Spices up
- 4. Orchestral strings
- 5. Rink legend Bobby
- 6. They may cut the checks or call the shots
- 7. Behold, to Brutus
- 8. Shoulder muscle, in gym lingo

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© Summer 2016

- (homophone of 43-Down) **9.** Cremation container **10.** It flies by night **11.** Narcissistic characteristic 12. Expulsion of an alien (from the French for "send back") **17.** How great minds may think **18.** Key chain? **22.** Is in France? 24. St. James, first woman to compete in the Indianapolis 500 26. PC key 27. Mexican "ayes" **28.** LAX screeners 29. Shakespearean or theatrical Prince 30. The Andrews Sisters and The Jonas Brothers, for two **31.** Bygone farmowners (and no, it has nothing to do with marital status!)
- **35.** Eyes, poetically

38. Liquid overflow

39. Many a JPEG file, briefly

- 40. Thumbs-up vote
- 42. Common street or tree
- 43. Handed out cards
- 44. "As I see it," in a text
- 45. Alexander Hamilton's Caribbean
- birthplace
- 47. Many US cars
- 48. Like some old-fashioned lamps
- **49.** January 20, 2017 to 16-Across, one can hope
- 50. FedEx again, e.g.
- 55. Qatari, e.g.
- **56.** Free of contaminants
- 58. On the pinnacle
- **59.** Insignificant
- **61.** TiVo precursor
- 62. With "by," how things may be played
- 63. Hippie's hangout

Life on a Roll

Magic Over St Lawrence River

Elodie Pauwels



Summer rhymes with sunny weather and long days. It also rhymes with vacations and no tight agenda. No matter if you are an early bird or a night owl, you might admire a magnificent sunrise such as this one in Sainte-Anne-des-Monts.

Many of you have already been struck by the warm colors of a sunset, here over Montreal. ■





All Photos by Elodie Pauwels https://elodiepphoto.wordpress.com/



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