



PHILADELPHIA
An Environmental Heritage



**The Academy of
Natural Sciences**
of DREXEL UNIVERSITY

A speech from the Academy of Natural Sciences of Drexel University President and CEO Scott Cooper, delivered at our annual Spring Forward dinner on Tuesday April, 10, 2018.



I wandered lonely as a Cloud
That floats on high over Vales and Hills,
When all at once I saw a crowd
A host of dancing daffodils;
Along the Lake, beneath the trees,
Ten thousand dancing in the breeze.

The waves beside them danced, but they
Outdid the sparkling waves in glee.
A Poet could not but be gay
In such a laughing company.
I gaz'd—and gaz'd—but little thought
What wealth the show to me had brought:

For oft when on my couch I lie
In vacant or in pensive mood,
They flash upon that inward eye
Which is the bliss of solitude,
And then my heart with pleasure fills,
And dances with the Daffodils.

*“I Wandered Lonely as a Cloud” by William Wordsworth
First version, composed in 1804. Published in Poems, in Two Volumes, 1807.*

William Wordsworth was a little over 30 years old when he wandered, not so much lonely as a cloud, but with his beloved sister Dorothy along the banks of Ullswater — one of Cumbria's many sublimely beautiful silver lakes — and happened upon the thick drift of bustling narcissi.

His words sketch a picture of nature at its most romantic. His poem is no less eloquent in describing nature's restorative power. No matter how insulated from it you may be, or might consider yourself, its mere recollection can raise the spirits. Knowing simply that it is there can be enough, even when you are on the couch.

Wordsworth was born a little to the west of Ullswater in the picturesque market town of Cockermouth. He studied a little to the south at Hawkshead Grammar School, the same school attended 150 years earlier by Thomas Holme.

Holme was the son of a simple yeoman and sought his way out of Cumbria by way of a captain's commission in Cromwell's army. He flourished. After retiring, he was granted 4,000 acres in County Wexford, Ireland, and there joined the country's Quaker movement — and met William Penn.

In 1682, Penn wrote to Holme from his new colony offering him the role of Surveyor. Holme quickly accepted and sailed with four of his children to Philadelphia. He briskly set about his work, and a year later his "Portraiture of the City of Philadelphia" projected an image of urban grandeur, civility and order. Designed to encourage shareholders and lure settlers with the prospect of a new and improved life in "William Penn's wood," Holme's document depicts a grid of broad, intersecting streets

stretching for two miles between the Delaware and Schuylkill Rivers. In the middle is an ample civic square, echoed in each quadrant by a spacious park adorned with symmetrical plantings of bushy trees. Penn wished that his new capital would "always be wholesome." With that aim, each house would ideally be placed in the middle of its plot "so there may be ground on each side for gardens or orchards or fields."

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Unlike Europe's chaotic capitals, Philadelphia was intended to be, in Penn's words, "a greene countrie towne" where settlers were required to preserve one acre of trees for every five cleared. Holme died in 1695, and Penn left for England six years later, never to return. But the plan they conceived lived well beyond them both. Nurtured by enduring Quaker values, it lent shape not just to Philadelphia but to cities around the world.

Most Quakers in the 17th and 18th centuries lived in farms or small settlements and understood completely the delicate symbiosis of man and nature, as well as their duty to tend to "God's creation." By 1772, the preacher John Woolman was already challenging Quakers to be mindful of the needs of future generations, writing that "the produce of the earth is a gift from our gracious creator to the inhabitants, and to impoverish the

earth now to support outward greatness appears to be an injury to the succeeding age.”

Friends began to study the natural world, sharing specimens and knowledge, establishing gardens and arboreta, writing of America’s extraordinary natural bounty.

Philadelphia was an obvious place in which the father of American botany — John Bartram — might establish the country’s first true botanical garden.

And it is with some elliptical satisfaction that we learn that his son William’s travelogue of collecting adventures across America’s South was a source of inspiration for our old friend Wordsworth — despite the absence of daffodils in Florida!

The environmental advocacy of these early Friends grew within a network of social justice commitments to anti-slavery, temperance, Native American rights, women’s rights, local sustainability and the welfare of animals. Their central affirmation was that humans should interact together and with the natural world as God’s complete and singular creation.

Now, while the past may seem like a foreign country, Philadelphia in 1812 might not be as unfamiliar to us as we first might think. The government was embroiled in a raft of trade wars. Candidate Clinton had lost a closely contested presidential election that turned on the votes of just a couple of states in the Electoral College. The newspapers were filled with complaints about Philadelphia’s civic infrastructure — in this case not so much potholes, but the disruption caused by the laying of a pioneering system of wooden pipes that would ensure “the

speedy introduction of a copious supply of wholesome water [that] is deemed essential to the health and preservation of this city.”

It is perhaps no surprise that in this turbulent atmosphere a modest group of seven men met privately to share their passion for nature. They formed a society dedicated to “useful knowledge.”

They were an unusual cohort. Three were immigrants with European scientific backgrounds pursuing new ventures in America. The other four were established businessmen from outside the circles of Philadelphia’s social elite.

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A reading of the rather circuitous constitution of their freshly-minted Academy of Natural Sciences reveals the founders’ profound commitment to a central mission — the creation of a “Society of generous good willing emulation for the acquirement, increase, simplification and diffusion of Natural Knowledge, unconnected with and unwarped by political or religious theses, views or prepossessions.”

Within this Quaker city, founded on the tenets of environmental sustainability, committed to the value of science, dedicated to the advancement of social justice, these seven men established an institution of true integrity — a timeless block of intellectual granite that would resist the temporal tides of willful ignorance and exist outside the currents of cultural identity.

While they were very much of their time, they also were very much of our own. The role the Academy set out for itself then is needed as much today as it ever was.

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SCIENCE UNDER SCRUTINY

For the last four years around May, California's Chapman University has conducted a random survey of over 1,200 adults from across the United States. It determines their level of fear in connection to 80 different topics, including crime, government, war, disasters, pensions, health care, technology and other issues. This year, for the first time, worries about the environment are in the top ten. In fact, four of Americans' top ten concerns are related to the health of our planet.

The runaway fear, at 75 percent, is the corruption of government officials. Second is health care. In third place, however, is the pollution of oceans, rivers and lakes; in fourth is the pollution of drinking water; in eighth is global warming and climate change; and in tenth is air pollution. These fears are not unfounded.

It is now nearly four years since the people of Flint, Michigan, had clean water to drink. In other cities across the country, water is delivered to homes through aging pipes. Laws restricting coal companies from dumping mining waste into streams and waterways have recently been repealed. Proposed changes to the Environmental Protection Agency will, if implemented, eviscerate programs critical to keeping our watersheds clean. Already the agency's Scientific Advisory Board has begun a steady shift from scientists supported by government to those funded by industry.

Consider just one hot-button subject for which overwhelming peer-reviewed scientific research exists — climate change. Despite the enormous evidence to the contrary, around 20 percent of Americans still do not believe in global warming, while a further 30 percent accept climate change but do not believe that it is related to human impact.

The neutrality of science is being tainted. Its value is being diminished. Facts are slowly giving way to opinion. Science is, to quote our founders, being “warped by political theses.”

The question we must ask ourselves is why science is such a common target? Political expediency is, of course, one reason, but perhaps it is not the only one.

The science writer Seth Shostak suggests a number of others. In the early 20th century, the incipient discipline of quantum mechanics was a science apparently without practical value. Yet today, anyone with a cell phone owns a device that depends completely on our settled understanding of the curious behavior of subatomic particles. Basic research matters — even if its immediate benefits are not always obvious. Rarely, if ever, is it frivolous. That needs to be better understood. Science, especially basic research, has something of a PR problem.

Modern science also presents uncomfortable issues. The curators of this very institution have for centuries identified, classified and collected the natural world. But natural science has today evolved to be that and so much more. Consider just one subset of the life sciences that was foreign to most of our curatorial forebears — genetics. This subject alone confronts us with discomfiting ideas. Should our grandchildren begin life as illness-resistant designer babies?

Today, science is also, quite simply, more complicated than it once was. It's tough to explain. Is it any wonder that those whose lives may have been adversely impacted by science might somehow come to regard it as a threat?

Finally, of course, science isn't always right — though the joy of empiricism and peer-review is that it rarely stays wrong for very long. That said, mistakes today are more widely shared and more readily usurped than in the past. One slip can be fatal, not just to the scientist but conceivably to the entire field of study.

So, all of this naturally leads us to the question: What more can we at the Academy of Natural Sciences do about it? Is there a way in which we can draw on the values of Philadelphia and the Academy to help bridge the gap between the scientific and non-scientific factions, and create “useful knowledge” through basic and applied collections-based research? The answers, I believe, are: “yes” and “undoubtedly.”

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A VISION FOR THE ACADEMY

The Academy of Natural Sciences is blessed with remarkable staff across every domain and discipline. From paleontology to learning, from financial management to water ecology, we have passionate people who care deeply about what they do and know precisely why they do it.

Last year alone:

- 36,300 students, parents and teachers participated in the Academy's STEM programs.
- We served over 260 schools across Philadelphia.
- 14,000 children attended Academy On-the-Go classroom visits.
- We supported 58 co-op students.
- Our scientists visited 12 countries, described 37 new species and unearthed six new dinosaurs.

But is that enough? Are there ways in which our work can be corralled so that the whole might somehow add up to more than the sum of its parts?

Are there ways in which we can better integrate with Drexel and Drexel with us?

Are there ways in which we can more fully support under-served communities across Philadelphia? After all, Philadelphia has the highest level of poverty of any major city in America, and clean water is far from a given in many parts of the metropolis.

Are there ways in which we can impact not just the rural water catchments of the Delaware and Susquehanna, but also the lead, heavy metals and other polluted runoff that contaminate areas of our city's soil?

Are there ways for us to draw on the city's Quaker origins of environmentalism and social justice and work with others to build a more equitable City of Brotherly Love?

If the vision for Drexel is that it must become the most civically-engaged university in the country, then a vision for the Academy could be that Philadelphia should be the most environmentally engaged city in the United States. Why shouldn't it be? The city once was; why shouldn't we work to bring that about again?

Our position statements on climate change, water, evolution and biodiversity and extinction have lent us voice. We shouldn't be scared to use it. We must not only inspire people to value their connection to nature but also to do something about it. But in doing so we must recognize that dinosaurs, dioramas and graphic panels are limited in what they can really achieve in this respect. Rather, we must trust in the one commodity that makes us such a world-class institution, the one commodity that distinguishes us so completely from other science institutions, the one commodity that inspires our research and the privileged few that get to see it — our exceptional collections that have been hidden away for far too long.

We must also direct ourselves to one other commodity that is today rarely apparent. When our seven founders formed the Academy, they understood immediately that their new enterprise needed an address, a home. Their requirements were simple: a reading room, a place to deposit specimens, and, in their own words "a conversation hall." Not a lecture hall. Not an education space. A conversation hall. And that, crucially, is how everything we do — research, collections care, education, programming

— can all add up to being greater than the sum of its parts, by being yoked in support of conversation. But nowadays that's hard work.

“For too many of us, it's become safer to retreat into our own bubbles, whether in our neighborhoods or on college campuses, or places of worship, or especially our social media feeds, surrounded by people who look like us and share the same political outlook and never challenge our assumptions. We have become so secure in our bubbles that we have started accepting only information, whether it's true or not, that fits our opinions, instead of basing our opinions on the evidence that is out there... But without some common baseline of facts, without a willingness to admit new information, and concede that your opponent might be making a fair point, and that science and reason matter, then we're going to keep talking past each other, and we'll make common ground and compromise impossible.”

Some of you may know that was a quote from President Obama's farewell speech. He makes a good point. But this is NOT a partisan issue. It is neither red nor blue, neither left nor right. We must remain, as our founders would have wanted and as any good dinner host will advise, entirely removed from politics. Rather, we must use our trusted status as a museum to create neutral spaces in which people can simply talk to each other, and resolve difficult issues, issues that are so often about science — environmental science — natural science — in their way, on their terms. We must do what we can to stop people talking past each other. Where are the public forums for such conversations? Museums.

What might such a museum look like? Well, it will need to look a little different than this one. Sadly, we have kicked the maintenance can down the road for too long. The can is flattened, and we have run out of road. We need to revitalize our building, and I will be working with the Board in the coming months to identify options to do so. But what might a regenerated Academy look like? Let's start on Race Street.

Imagine a large temporary art installation fronting Logan Square and provoking topical conversation among the thousands of drivers that pass by daily.

Imagine entering the front door via an elegant, sweeping ramp — so that here, and throughout the museum, mothers with strollers can have easier access with all of their children, and people with disabilities can enjoy the museum in the exact same way as everyone else.

Imagine not being greeted by a ticket desk but a wide, open, social space, free to access, that embraces everyone every day — a welcoming place to drink coffee, to eat, to dwell, to engage, to escape, to chat, to learn, to laugh, to de-stress, to have fun.

Imagine this being encapsulated by exhibits that don't impart information so much as provoke thought. Exhibits that straddle the divide between art and science, that tackle difficult scientific subjects and stimulate discussion.

Imagine as you move from our “freemium” offer through to our premium exhibits, you enter a familiar landscape of dinosaurs and dioramas, but also a rich world of collections — our collections — those collections that make us so very special.

Imagine an Academy in which there is no front and back of house, but the two are entirely merged so that everyone can share in all those aspects that make museums such compelling places to visit and work in. Offices, research laboratories, teaching areas, libraries, preparation spaces, collection stores, exhibits, school learning labs — all are visible and, where possible, accessible — and together facilitate connections between scientists and schoolchildren, office workers and grandparents, faculty and docents.

Imagine an Academy that doesn’t only rent natural history exhibits (valuable though they are), but collaborates with young and old throughout Philadelphia’s diverse communities to co-create exhibits that speak to them and to the issues that confront them every single day.

Imagine an Academy with powerful social as well as scientific impact — a place that transforms perspectives, builds communities, broadens horizons and fosters empathy.

Imagine an Academy that generates knowledge, encourages advocacy, fosters citizens, advances world-class natural science and supports the city in its attempts to develop policies that favor environmental justice.

Imagine a dynamic, ever-changing Academy that doesn’t have visitors, it has users.

Imagine an Academy that serves as a connector for all the environmental bodies of the region and serves as a shopfront for their remarkable work.

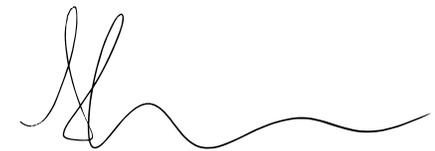
Imagine an Academy that helps people understand that science isn’t just about bangs, buttons and levers, it’s about the way we live now and the way our children and grandchildren will live in the future.

Imagine an Academy that stakes out the common ground, that helps all of us to *stop talking past each other*.

I can imagine it. I can imagine it when I’m here with you. I can imagine it when I’m at home on the couch. And when I do, “my heart with pleasure fills, and dances with the Daffodils.”



Scott Cooper



President and CEO

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of Drexel University