

Sample 1/4 (Science-y Essay)

The Birth of Color

Color, as we know it today, didn't really exist until about 500 million B.C. Before then, the oceans of the world were populated by organisms that lived in areas too deep for the sunlight to reach. Without light, there was little need for sight, and indeed, the organisms in the oceans, the atmosphere and the land were all blind.

This started to change about 550 million years ago, with the development of the first eye. It was a gradual process. Initially, some organisms had the ability to distinguish only between bright and dark. This came in handy for spotting prey or predators that cast a shadow as they swam past. Other organisms would use this sensitivity to migrate to brightly lit areas with microbial food sources. Sensitivity to light became a critical survival skill, and those more sensitive to brightness had higher chances of survival and, thus, reproduction.

It took another few million years until sensitivity to light evolved into sensitivity to color. Some organisms became easier prey simply because they didn't blend in with their natural environments or because their predators had evolved visual organs far too accurate for them to escape. Color could now be seen and, thus, became relevant.

Vision wasn't the only thing that changed. As the eye evolved, so did the color of the natural world: changes in coloration served animals and plants as camouflage, warning mechanisms and as adornments to attract mates and prey. The eye had become an instrument not only for survival, but also for fast locomotion and navigation. As a result, prey and predators started to compete in an arms race for the functional accuracy of vision and color, ultimately propelling what many believe to be the most significant event in evolutionary history: the Cambrian explosion.

To suppose that the [human] eye, with all its inimitable contrivances, could have been formed by natural selection seems, I freely confess, absurd in the highest degree.

— Charles Darwin in *On the Origin of Species*

The human eye is a biological miracle. Its sheer perfection and complexity were an enigma to Charles Darwin, and even to this day, the most sophisticated technology fails to replicate the accuracy of our visual perception. In fact, our sense of vision has become so overbearing that we've lost some of the sensitivity of our other senses. Most humans rely on vision for over 80 percent for their sensory perception. Unsurprisingly, children who were born blind or lost their sight before the age of 10 tend to have much more developed senses of smell, hearing and touch. Contrary to ours, the visual lobe inside their brains does not work in isolation; it works in tandem with the brain regions of other senses to improve the overall sensory perception.

Life in modern society has radically impaired the accuracy of our senses. We've betrayed the miracle of human vision with a lifestyle that fixes our eye-balls on static screens that emit blue light. Our craving for sugar — which originally arose as an evolutionary trait to make us eat seasonal fruit in the few months it was available — has over-saturated our sense of taste and skewed our diets. Living in cities precludes us from interacting with the odor-rich nature that used to be all around us, making our sense of smell seem nearly obsolete despite its incredible potential. All these factors, and many more, have contributed to our heavy reliance on vision today.

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Sample 2/4 (Descriptive Essay)

Journey of a Dandelion Seed

On hot summer days, the wind sweeps the hairy seeds off the dandelion plant and carries them away. The sunlight hits the earth, and heat radiates off the ground into the air above. The warm air expands and rises. Ideally, the air is both warm and dry, for it is on dry days that the fine pappus hairs of the dandelion spread out widest, ready to latch on to rising winds.

A few lucky seeds are caught by the thermal updrafts and rise with them. Up high, the wind blows stronger and the little parachutes are carried far. They glide through the air — the pappus hair on top, the heavy fruit at the bottom. The low center of gravity ensures that the glide is steady and that the parachute is well exposed to rising currents.

Some dandelion seeds travel over a kilometer. The other ninety-nine percent land within ten meters of their parent. At an average height of 30 centimeters, the parent plant offers little exposure to the strong wind currents up high. This is why dandelion diaspores — the dispersal units formed by the pappus, stalk and fruit — wait for dry and hot summer days before they fully expose their feathery hairs to the wind.

But steady flight is not always needed. Maple seeds, for example, are too heavy to ride the rising winds. Instead, the winged diaspores have mastered the art of falling. Or rather, the art of spinning. About half a meter into the fall, the wing of the maple diaspore starts to rotate around the heavy fruit. The asymmetric weight distribution keeps the falling seed in constant motion.

The rimmed front edge of the wing is slightly heavier than the rear. It cuts through the air, compressing the air below the wing and stretching the air above. The resulting tilt slows the seed's descent, allowing the wind to affect its trajectory.

The maple seed hits the ground fruit-first. If the angular momentum from the fall isn't strong enough to "plant" the seed, the jutting wing can serve as platform on which a foot, a paw or the weight of snow will push the fruit into the earth.

Sample 3/4 (Short Blurb)

Tech trends - New Digital Photography

Google, Samsung and Apple are the future of photography, leaving established photo brands like Nikon and Canon in the dust. The reason is simple: technically speaking, cameras hardware can't get much better - glass can't get much clearer, sensors can't get much more sensitive. These physical limitations make further hardware improvements highly unlikely.

This is why the future of photography will not depend on optics, but software. In other words, what matters now is not how the picture is taken, but how the image information is processed inside our smartphones.

To illustrate this, let's look at the new I-phone X: when you take a picture with it, you can apply an effect called "portrait mode" that blurs the background while keeping people in focus. To achieve this, the phone has to accurately identify and isolate human shapes from any possible background - an amazing feat that can only be achieved with highly efficient algorithms extensively trained on huge data sets.

Similarly, the photos of the future will likely be highly software-enhanced, because algorithms will affect everything from focus to color tones and exposure.

We've nearly exhausted the potential of optical hardware, but the possibilities for software-enhanced photography are endless. They already are the new vehicle for competition and innovation in digital photography.

So, next time you whip out your phone to take a selfie or document a fancy meal, consider that your pictures are no longer just "taken", but increasingly "constructed" inside your phone.

Sample 4/4 (Policy Article)

Let America Lead (Why we need a carbon tax)

The U.S. could lead the world towards a cleaner and more sustainable future. But domestic politics won't allow it. The left keeps pushing for environmental regulation while the right remains wary of policies that threaten to grow government or weaken the U.S.-economy. This political deadlock keeps the country from effectively addressing climate change.

In avoiding the climate discourse, America is not only abdicating a responsibility; it's passing up an opportunity no other nation has. This is because the U.S. – with its high CO₂ emissions rate and strong trading ties to China – is uniquely positioned to lead the world against the climate threat. Whether or not it rises to the challenge might determine its role as the leader of the free world.

Fortunately, conservative politicians are increasingly aware of the need for a climate strategy — partly due to the public's rising awareness of climate change, partly due to fear of losing millennial voters.

Republican leaders led by former Secretaries of State James Baker and George P. Shultz are now proposing the Baker-Shultz Carbon Dividends Plan, a conservative strategy against climate change — one that operates on the principles of free market and limited government. The idea is simple: put a price on carbon and rebate all the revenue to citizens in the form of monthly dividend checks.

Here's how it works.

Whenever fossil fuels enter the market, they are taxed, at, say, \$40/ton CO₂. This way products with a heavy CO₂ footprint become more expensive, sending a clear price signal throughout the economy. All of the tax revenue earned lands in one pool. The money in that pool is then divided into equal portions and returned to the American people in the form of dividend checks, hence the name "carbon dividends".

This means that regardless of personal energy use, you and your neighbor will each get a check of equal amount. The Treasury Department estimates that roughly 70% of Americans will come out as net winners. Yes — they will earn more money through the check in their mailbox than they spend on energy intensive goods. This works because the wealthier 30% tend to pollute more and, therefore, also pay more. Luckily, even large companies such as Exxon and BP are okay with that — for them, a predictable carbon price is preferable to unpredictable regulative policies.

Now, how can the Baker-Shultz-Plan make America the global leader on fighting climate change?

America is responsible for roughly one sixth of the world's greenhouse gas emissions. This also means that America's policies have no effect on the other five sixths. So, even if America were to radically reduce its carbon footprint, other countries would keep emitting enough CO₂ to drive global warming forward. This is why the Baker-Shultz-Plan comes with a border carbon adjustment.

Sound complicated? — No worries, it's not.

U.S. exports to countries without comparable carbon pricing systems will receive rebates for carbon taxes paid in the U.S. This way, American companies can export products at their pre-tax prices and keep their competitive edge in foreign markets. Conversely, imports from countries without comparable carbon pricing will face fees (tariffs) on their carbon content when they enter the U.S.

This way, American exports stay competitive while countries trading with America will be encouraged to introduce their own forms of carbon pricing to avoid paying the tariffs. So, if America were to pass the Baker-Shultz-Plan it could set off a domino effect powerful enough to radically move the world economy away from fossil fuels.

Maybe, we don't need to be that ambitious. Affecting only one trading partner might be enough. As you know, America's main trading partner is none other than China, the world's #1 CO₂ polluter. China and the U.S. together account for roughly 40% of global greenhouse emissions. So, if China were to introduce a carbon price in response to American import tariffs or in an attempt to outcompete America on the environmental front, worldwide CO₂ emissions could easily be reduced by nearly one half. Other countries would soon follow.

This ambitious strategy is backed by many of the world's most renowned economists.

Greg Mankiw, former Chair of Harvard's Economics Department and co-author of the Baker-Shultz-Plan, maintains that “among economists, the issue is largely a no brainer,” and frequently refers to an IGM Forum survey where a panel of 41 prominent economists were asked whether a carbon tax is a less expensive way to reduce carbon-dioxide emissions than a collection of regulative policies. 90% of panelists agreed. Among them was William Nordhaus, winner of this year's Nobel Prize in Economic Sciences. Nordhaus believes that a carbon tax which “rebates the revenues back to consumers [...] is actually the most durable and one that will be most effective.”

Stanford economist Edward Lazear – the only surveyed Economist who disagreed with the statement – observed that “as it stands, we don't have a global body able to enforce environmental standards of this magnitude.” He's not wrong. But if America were to introduce a carbon pricing strategy that gives its trading partners clear incentives to follow suit, it could redefine its leadership role on the global stage, and save the planet in the process.

Whether the Baker-Shultz-Plan succeeds is up to the American people. Will they stand behind a strategy that, for once, puts America first?
