Gaining clarity and serenity

THROUGH MATERIALS

At this stage in my life, I try my best to avoid things that aggravate me. Tranquility and peace of mind are far more important than they were even a few years ago. If we could all enhance the positive aspects of our existence and eliminate the negative aspects, wouldn't life be so much simpler and more enjoyable? But, of course, life doesn't work like that. Natural law (one of Murphy's laws, perhaps) allocates a certain amount of aggravation to every individual. One of the positive aspects of my life is materials research and the Materials Research Society (MRS). Scientific activities bring a certain clarity to life that is usually not found in other realms. Consequently, I'm trying to fill my life with activities associated with science, engineering, and math, and de-emphasize other areas of my life.

When I was younger, I was entranced with politics. I actively participated in campaigns, joined political organizations, educated myself on the issues, and reveled in the process. I avidly watched every TV show involving political commentary. Some time ago, I realized that was not providing me with any real benefit, but was increasing my levels of aggravation. So I quit. Cold turkey! The bloviating talking heads no longer have my attention. I still care about political issues, but I resolved to avoid needless conflict. This wasn't as difficult as I had feared. Instead of watching political shows on CNN or other stations, I read more. I substitute the *MRS Bulletin*, *Science*, *Nature Materials*, etc., in place of political commentary. This has improved my tranquility and the quality of my life.

My recent retirement and move are significant sources of aggravation. I successfully completed changing my mailing address, with the exception of one credit card. Unfortunately, I had connected that credit card to my old telephone number and old work email address. When I went to make some purchases shortly after moving, the credit card company had blocked the transaction. They wanted me to prove I was who I claimed to be, but they tried to reach me using the old information on file. I was stuck. Credit for the purchases was denied, and the card was locked against further use. It took more than a month of effort to get it restored. Ironically, one of the factors that helped move things along with the blocked credit card [to prove my identity] was the fact that I was making purchases using a competitor's credit card.

One of my recent purchases with that credit card was a pair of bookcases. Some of you may remember from some of my previous articles that I love reading, and have many, many books. Hence, the need periodically for more bookcases. Assembly was required, and the materials came with a nice set of directions, which I followed to the letter. Unfortunately, I was left with an unused slat and an extra set of screws and bolts. On closer inspection, the figures that were included with the directions showed where the slat fit and how to connect it, even though none of that was mentioned in the written directions. Arrrrgggg!

Most credit cards use a RFID chip to validate use and provide an extra layer of security. The passive RFID chip is a microelectronic device that operates at radio frequencies. They are interrogated by a local chip reader when the chip is inserted into the reader. The chip is backed up by a magnetic strip, which is the older technology. While neither technology guarantees security, one of my credit cards routinely malfunctions using either the RFID chip or the magnetic strip or sometimes both. If you've ever been stuck in a long checkout line at a store, while you attempt to use the RFID and then the magnetic strip, only to finally have the clerk manually enter the information, you understand my frustration. Some of the comments from those waiting in line behind me have turned ugly. Very, very ugly.

More aggravation came from a crossword puzzle app for my iPad. I loved that app, and enjoyed filling out the crossword puzzle every day for several years. Unfortunately, shortly after renewing it recently for another year, it somehow decided that my access had expired and demanded another renewal payment. I contacted

https://doi.org/10.1557/mrs.2019.56 Published online by Cambridge University Press

the store. They told me that the problem wasn't on their end, but had to involve the newspaper from which the crossword puzzle was derived. So I contacted the newspaper. They denied that the problem came from their end and referred me back to the app store. I went through three rounds of that before someone at the app store told me that the app was, in fact, a third party app, and that I would need to contact the app developer. I gave up. I loved that crossword app, but the aggravation wasn't worth it.

A recent source of aggravation is my main television. It's a 65-inch quantum dot LED television connected to my cable television system. The image quality, colors, and contrast are superb. Viewing shows on that TV gives me a great deal of enjoyment. However, about eight months after purchase, it began to turn itself on at random times—day or night. One night last week, I had to get out of bed four times during the night to turn the TV off. I swear that there are no boojums or ghosts or other nocturnal visitors who are turning on my TV set. I called the technical service group where I purchased the TV, and they indicated that I need to turn the TV off using the TV remote instead of the cable remote. I am not sure that this is the real solution, but I'm trying it for now. I have a sneaking suspicion that there is some flaw with the transmitter in the cable remote or the receiver in the TV set that is the real culprit. It may take some materials research to determine the problem and engineer a solution.

Have you ever encountered an automatic garage door that refuses to close once opened? Mine gets to about a third of the way closed, and then stops, only to return to completely open. If I cycle the system several times, it usually will close. I'm not sure of the source of this problem—it may involve a sensor that prevents the door from closing, or sunlight that gets reflected into the sensor, preventing it from operating properly. As any good materials researcher knows, the solution would be to place a filter in front of the sensor that blocks solar light at all wavelengths except those needed for sensor operation.

Another source of aggravation is the lack of clarity that pervades everyday human life. Our mental and emotional health is enhanced by clarity, with relationships, events in the world around us, our understanding of nature, and the work that we perform. The last two are especially critical for scientists and engineers, including those involved with materials research. We seek truth regarding the nature of the universe and the materials that make it up.

Those of us who are involved in materials research are trained in science, engineering, and mathematics. We rely on a wide range of rules that cover what we know of nature. We attempt to use logic to help us understand and accept or reject arguments about the nature of materials. We discuss and debate and argue with colleagues *ad nauseam* in efforts to improve our understanding. We read and dissect countless journal articles. We publish our thoughts in our own papers. We listen to technical talks by our colleagues, and present our thoughts to our colleagues. We scrawl our ideas on white boards with cartoons illustrating the ideas surrounded by math justifying our thoughts. And yet, we see dimly as through a veil of ambiguity.

Clarity sometimes seems to emerge only to be defeated by new thoughts and counterarguments. At other times clarity shines like a bright light, and we bask briefly in its glow, only to slowly realize that the light is surrounded by darkness. Sometimes we realize that we can look around us and see hundreds or thousands of areas that are brightly lit, like a giant parking lot at a mall. But the regions between the lights are dim. And, often, some of the lights are broken, so that larger areas are covered in darkness. Beware the darker regions! You might encounter the dreaded "jabberwock" or the "frumious Bandersnatch." Or at least a dragon or two.

There are some out there who act as trolls inhabiting the darker regions, lurking in the dark, and attacking without mercy those who dare to enter what they view as their domain. But most materials researchers act as light-bringers, replacing broken lights and increasing the luminosity of all lights so that the darkness is pushed back, and some sense of clarity emerges.

One source of clarity that emerges from all of this is that most work in materials research is incremental in nature, each of us attacking some small portion of a materials issue, to better define the issue and to help bring clarity to the whole. There is great power in this, because there are tens of thousands of us. Some of us work alone, but most of us collaborate with a wide range of colleagues. This is natural because many of the tools we use (TEMs, SEMs, FIBs, x-ray systems, lasers, cyclotrons, synchrotrons) are expensive to develop and operate. Many facilities are user facilities funded by governments with collaborative research in mind.

I treasure these activities and interactions. They shield me from the cares and aggravations of the everyday world and provide a sense of accomplishment that doesn't come from solving problems with my credit cards or intermittent problems with a TV or garage door. I assume that I, like most humans, will continue to have those kinds of problems, but I can't imagine a more fruitful way to spend what remains of my life than to continue my involvement with materials research through MRS.

Steve Moss

***MRS Bulletin* welcomes suggestions for submissions to Posterminaries.** Description: Light commentary and observations relating to anything of interest to the *MRS Bulletin* readership. Topic must have a materials angle. Word play is a plus. Length: 1600–2000 words. Format of submission: Email as a Word document to Bulletin@mrs.org. Examples: mrs.org/posterminaries.

https://doi.org/10.1557/mrs.2019.56 Published online by Cambridge University Press