



Can Science Become Emotionally Intelligent?

I find analytically trained people to be uncreative and emotionally insensitive. Can this be changed?

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“There is an old-fashioned word for the body of skills that emotional intelligence represents: character.”

— **Daniel Goleman** (1995, 285)

Emotional Intelligence

Daniel Goleman defines the four dimensions of emotional intelligence as,

- self-awareness,
- self-management,
- social awareness, and
- relationship management.

To be a self, social, or relationship adept you need emotional intelligence, but to be a physicist, engineer, or mathematician you do not. None of these play a large role in one’s analytic ability divorced, as it is, from the realm of human relations.

In my experience in physics in the 1980s and 90s there was no recognition of the value of emotional intelligence. In the five university departments in which I worked there was little of it to be found. I mentioned this to my dissertation advisor in 1981 and was sharply told to keep my dirty laundry to myself.

This has not always been the case. When social interaction was needed in the past, the features of emotional intelligence were more evident. The interactions between physicists of the 1930s and 40s were more significant, more important to their work, and less focused on money and patronage.

I knew some of these early researchers and read of others. Scientists of this era had a different approach to each other, their work, students, and society than what has since come to predominate. Today's social relationships in physics, and I suspect most other sciences, are built on institutional power, financial resources, celebrity, hierarchical management, and profit.

Starting in the 1990s there was a trend toward greater inclusion. There started to be a recognition of the ills of exclusivity and prejudice. People in the technical fields began to speak of the lack of minority representation, notably women and people of color. Now, with a rapidly rising trend toward exclusive control, the pendulum is swinging back toward power and nepotism, to the white man's world.

Business Versus Science

“Of all the people we've studied at work, we have found that 90 percent of high performers are also high in Emotional Intelligence. On the flip side, just 20 percent of low performers are high in Emotional Intelligence.”

— **Travis Bradberry and Jean Greaves** (2009, 21)

Emotional intelligence plays a greater role in business than it does in research science. This lack of emotional intelligence makes one wonder what science has lost? Are we missing that 90% of high performers in research because research scientists are emotionally unskilled, or is this an area where emotional intelligence is not needed?

The answer is three-fold. First, in the current environment emotional intelligence is not valued or demonstrated and research moves accordingly. Opportunities may be lost, but who would know of the potential of uninvestigated ideas? Better social interaction and self-management might be a waste of time. Being distracted from a technical focus might lower technical output.

Second, emotional intelligence correlates with creativity and diversity of thought. The lack of creativity is evident in physics and is now widely recognized across fields well beyond the sciences (Stillman 2021). Some of the research that notes this blames poor childhood education and social media but, as I note below, this is a diversion.

Third, as profits become less important, flexible collaboration increases, relationships become more creative, and factionalism decreases. This is exactly the opposite of what's happening. In a nationally and internationally polarized world, short-term profits are more important and flexible collaboration less.

Is It Capitalism?

It's convenient to blame capitalism, but the same trend is evident in authoritarian economies. Profits, like currencies, are just a medium of control, and it's the control that squeezes out creativity in society, education, and research.

The education and entertainment industries are centrally organized. If they are the cause of anything, then it's intentional. The organizational intention is to focus on profit. This means the protection of existing profits or the exploitation of current opportunities, not the creation of new sources of either. As professional sports, horse racing, and cock fighting demonstrate, competition is not inherently creative.

These intentions are more brazenly obvious in research science where large investments in infrastructure prevent any technology that threatens it. For example, the move away from petroleum-based power is only possible because of the unexpected and unintended superiority of alternatives. The dominant paradigm never intentionally engineers its demise.

Consider electric cars, which will revolutionize transportation. Electric cars are an old idea but no investment was made to specifically advance them. It was not until lithium batteries and brushless motors made the technology viable that electric cars could compete.

Both of these innovations came from other fields, developed for the benefit of other industries. And even now, the conversion to alternatively powered cars has been grudging, restrained, and sometimes sabotaged.

Is It Creativity?

It has been noted that there are two types of creativity in research science: conceptual and experimental (Jones and Weinberg 2011; Irving 2022). Conceptual innovations have traditionally been made by younger researchers, while experimental innovations by older researchers as they have greater access to funding, laboratory resources, and job security. However, these results reflect dynamics within existing institutions, not what could be taking place if creativity was not fettered by the current structures, salaries, and securities.

My mentor Charlie Townes was 35 when he invented the precursor to the laser. He said that were it not for his having recently gained tenure, his institution would have stopped his research.

John Clauser, who eventually won a Nobel Prize for his work on quantum entanglement, was 30 when he started his experiments. It was Charlie Townes who personally made laboratory resources available to Clauser, without institutional approval. Without that, Clauser would not have been able to begin this work because the topic was unpopular.

I had insights when I was a graduate student, but it is only after being out of the field of physics for 45 years that I've been able to confirm their importance. If the work gets published, it will be the work of a 25-year old.

In my experience, graduate students of my generation were neither respected nor encouraged. Professors exploited students for their own advancement, and graduate students had no control over financial resources.

There was no suggestion resource management was anything students should learn despite its essential nature. The science students I knew didn't have the emotional intelligence to understand how they were controlled by the science subculture, nor did our professors.

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Relationship Skills

Relationship skill is important where communication is important. The exclusion of these skills has paralleled the rise of research capitalism which sees research as a profit center and communication the function of management. Socializing has always been discouraged on the shop floor, and research science has recast practitioners as producers, not leaders.

Having everyone think alike focuses attention but does not build relationship skills. Technical fields that insist on consensus create a social safety net at the expense of a diversity of opinion. Technical fields build artificial communities.

“Mathematics knows no races or geographic boundaries; for mathematics, the cultural world is one country.” — **David Hilbert**, mathematician

“The mass suppression of emotion throughout the civilized world has stifled our growth emotionally, leading us down a path of emotional ignorance.”
— **Wayne Payne**, psychologist (1985, Introduction)

Relationship skills are not learned from casual relations, they're learned from consequential relationships. Consequential relationships are those that expand our scope by addressing and accommodating consequential differences. Consequential differences are emotional differences, not factual discrepancies. You learn relationship skills by navigating fields of strong emotions.

Navigating issues is as important as resolving them because some emotional differences are not resolvable. For example, prejudice, elitism, and disrespect are personal attitudes expressed through emotions. You cannot argue away things that cannot be discussed.

Differences that are not conscious cannot be redirected. Issues of prejudice are bottomless holes, structureless realms of emotional chaos. You can't make progress when people don't know what to think.

Relationship skill consists of being able to find a common language large enough to accommodate what cannot be said. That is, an open language that invites conversants to express important feelings without requiring them to be fully formed.

Recognizing the Subconscious

Beneath our placid, public presentations are the things that bother us. Think of these things as the peaks and valleys on a topographic map of our emotions. This is abstract, which suits the tempered way we discuss emotions. For example, we are as annoyed that we need to fix our brakes as we are at the lack of love in our lives. Though love is more consequential, its chronic lack becomes a mundane annoyance.

Analytic people like to maintain a flat affect. Affect being the presentation of one's emotion. Analytical people are emotionally flat because they fear the loss of control that emotion brings. And they are usually correct in this because emotions are not controlled by the conscious mind.

Your conscious mind presents a whitewashed version of your emotions. You cannot consciously command yourself to have different emotions, but by suppressing some and expressing others you can appear to be controlling them. This works for a while, but not forever.

People who need to feel in control create like-minded groups. These groups create factions and entrench differences. Analytical people of my generation gravitate toward factionalism, hierarchies, and quantifiable differences. But since human qualities are not quantifiable, analytically minded people must find ways to measure these differences or to create them.

Creativity as a Breaking of Boundaries

“Creativity requires the courage to let go of certainties.” — **Erich Fromm**

Letting go of certainties is difficult. Erich Fromm's aphorism is of little help.

I've known many people who lacked courage. In every case, they built protective environments and didn't go outside them. When I led my wife into the woods to show her the fun of getting lost, she yelled in fear. When I put my mother on a simple, top-roped rock climb, she cursed me with profanities. When I tried to organize my physics colleagues to discuss fundamental problems, the younger ones didn't understand while the older ones felt it was beneath them.

These people were afraid of going outside their comfort zone, going beyond what's certain. I now see my experience as reflecting my fearlessness, an attitude not widely shared.

To overcome the fear of novelty you might start by learning skills in the areas you're afraid of, but fearlessness is more than establishing safety. Beginning rock climbers learn to trust the rope, and the first steps in bushcraft are learning direction. These are intellectual supports that build insight and intuition. You need tools that go beyond the task at hand and make you feel broadly prepared.

Social courage grows from building support as you move beyond what's familiar. Intellectual courage grows from being accepted for who you are. Creative skills develop when you find your own guidance and feel rewarded.

People who are limited by an analytical or academic mindset live in a cocoon. They are socially, intellectually, and creatively restricted. What they ultimately need is to move beyond these boundaries.

In dramatizations of liberation there is an “ah-ha” moment. In this moment a person goes beyond solving a problem or escaping restraint. Liberation reflects a personal revelation, an ability to experience things not just more skillfully, but more freely.

Creativity is not about building a better product or a new invention, it's about becoming courageous in accepting new attitudes. It's the freedom that we need as children to explore without judgement, to fail perhaps, but to return with new ideas.

"The things we fear most in organizations—fluctuations, disturbances, imbalances—are the primary sources of creativity."

— **Margaret J. Wheatley**, writer and management consultant

My professors needed to be told that both they and the society they created were too small-minded, but this is just the kind of criticism their profession protected them from. Over time, as we're now seeing, the organizations they've created to shelter their personal weaknesses are collapsing. Innovation is moving to new institutions with more freedom, while old institutions are denying entrance to outsiders.

With few exceptions, my professors hid within castles of authority, entombing themselves beyond the reach of change. Expanding their world only came through personal life crises, as it does for many of us. I could see this in the ones whose nerves were fraying, were out of touch with students, or who drank too much.

Students are groomed to have the same attitudes and weaknesses as their supervisors. Students are not even aware they have a choice because, in traditional compulsory education, they don't. In order to have choices they must insist on them. They must insist on the right to develop their character.

Creativity and Mental Health

I left the society of academic physics because it was unhealthy. I felt my colleagues were immature and unbalanced, and I saw things getting worse. I have had scant contact with any of the students who were my colleagues, but those I have encountered seem as unbalanced as before. After a person reaches their 20s only extreme events change their character.

There are many stories of mentally unbalanced scientists, and it's from these that we have the “mad scientist” meme. I've known many of these people. They are not mad as far as I know, but their values are strange and their emotions are odd. Their ability to empathize is limited.

There are many examples in the public sphere of technologies that have been poorly handled. The scientific approach has been misapplied not only by those outside of science, but by those within the

communities. Technical explorations too threatening to the power structure to be ignored have been blackballed as hoaxes and conspiracies.

Damaging information is presented by authorities who lack scientific knowledge. Biased expertise is purchased to endorse whatever conclusions the customer requests. The lack of transparency is pervasive, and opacity is grounds for suspecting manipulation. This corruption reflects institutional collusion, depravity, malfeasance, and a disrespect for science and creativity.

Morally compromised people do not do well outside of their social circles. At the same time, many of these are the people proposing solutions to today's problems and funding tomorrow's technology.

If you were to ask if they have the insight to know where to invest or what technology is safe, the answer is no. They were not trained in that capacity. They were trained to disregard unprofitable questions.

These are mentally fragile people. They may be powerful, but their internal worlds are small. They are not the people I see in counseling because they are not on a path to change and better mental health. They are not looking to improve their mental, social, or emotional skills.

Why I Wrote This Piece

Science is a popular subject. Most people have no idea what it entails beyond the technology they buy and the fictions produced by politicians, the media, and Hollywood. The bad science that fueled the public health fiasco of Covid-19 went right over the public's head despite 7 million deaths worldwide.

The systemic degrading of scientific thinking starts when children are trained to do as they're told. We're expected to continue this obedient behavior to the end of our productive lives. Science is all about doing otherwise.

Higher education provides minimal permission to think for yourself. Your free thought is directed at those questions given to you by your supervisors. The questions your supervisors approve are the questions that provide funding for their institutions.

Emotional intelligence is not recognized or encouraged as it's considered a management perquisite. As a result, people in our institutions lack both analytic and emotional intelligence. They lack these skills as individuals and as groups.

One way to remedy this is to start talking about it. I'm going to try to do this as a guest on popular science podcasts. I wrote this piece as an exercise in finding a positive way to phrase this problem since podcasters are interested in topics that engage and empower their audience.

My friend Neil Degrasse Tyson is today's most popular science popularizer ([Startalk Radio](#)), and he's on a short leash. He frequently appears in the media because he dances well telling people just enough to make them think he's right, but not enough—as Neil quaintly puts it—to know when he's wrong.

Wikipedia lists about 100 current science popularizers and most of them, like Neil, limit themselves to their specialty. There are few science generalists.

The opinions of generalists are harder to buy because they hold a larger hand. As a result, they are the first people to be disparaged or canceled by operatives of the political-economic machine and their minions. Some of these generalists include the following podcasters, and you should check them out:

- Nigel Booth and Matthew Bushell ([The Reality Check](#))
- Andrew Huberman ([Huberman Lab](#))
- Brian Keating ([Into the Impossible](#))
- Lulu Miller and Latif Nasser ([Radiolab](#))
- Michael Shermer ([The Michael Shermer Show](#))
- Chris Smith ([The Naked Scientists](#))
- Alie Ward ([Ologies](#))
- Bret Weinstein ([Dark Horse](#))
- Wendy Zukerman ([You're Wrong About](#))
- Jim Al-Khalili ([The Scientific Life](#))

I will suggest that these podcasters host me to address the problem of the lack of emotional intelligence and creativity in science, but I don't expect they will understand this problem. I expect their producers will feel uncomfortable addressing it.

Over time, this problem will gain recognition. The current Trump regime will certainly highlight the problems that follow from poor science and emotional ignorance.

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