

## The Yellow Raincoat

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Even in primary school I was preoccupied with the idea of protection from an unpredictable world -- protection that often came in the form of a glaringly bright, yellow raincoat that kept me dry on my way to school. The coat was a thoroughly synthetic creation of rubberized polyester; it would have been difficult to imagine anything less natural, or any artifact more embodying the tension between myself and my environment. More than its function of keeping rain out, it represented my fear of letting anything in: people most of all.

People were the most unpredictable elements of my world: unlike other objects they were more than the sum of the forces acting on them. The human factor was a constant irritant for a budding Laplacian like me: where a person was involved, one could never be assured of predicting the output, even if all the inputs were known. My wish back then was that I could be the human analogue of the neutrino I had read about in science articles: a particle that moved effortlessly through the world, almost never interacting. On the playground, while the other three-year-olds competed for the swings and the slide, I paced along the fence, studying the ground and identifying minerals in the rocks that I found. Rocks, unlike people, were safe.

Wrapped around and covering me, the coat represented my mother's triumph over my own will, and persistently reminded me of my dependence on her. In a fundamental way that I didn't consciously acknowledge, the coat came to represent my mother, and I loved and resented it as I loved and resented her. A fear of death, of being smothered and negated, drives us to separate ourselves from our parents. And a fear of life, of being responsible for ourselves in an indifferent world, brings us back to seek their protection. These conflicting denials of death and of life were attached to the coat: it made me impermeable to the assaults of the outside world, yet it defined me and prevented me from being myself.

It was only in solitude that I slipped between the horns of this dilemma. When I was alone, there was neither the threat of attention from other people, nor of having to submit to the decisions of my parents. The defeat of my will that was signaled by the yellow coat could be replayed as a victory, if I were the one who chose it. Walking alone through a downpour, I was immersed in the outside world's flood yet insulated from it. It was thrilling to feel the pressure of the rain and to see it roll off me and leave me dry. It was as if I were marveling at some alien world and knew that a spacesuit was all that separated me from its deadly atmosphere. Alone in the rain, I was both master of my own actions and master of my surroundings.

I believe that my sensitivity to the boundary between self and externality in childhood led me in my adult life to study people with autism, whose central, daily challenge is the work of imposing internal narrative flow on a deluge of external sensory inputs. Ironically, when I was in primary school I never felt much empathy for my autistic older brother. Now as I look back I see both science and autism are compulsions to order, which differ only in their degrees of abstraction. I feel now that the same set of genetic biases that gave my brother autism gave me just enough of a desperation for order to make me a scientist, and indeed, a student of autism -- enough to be driven by the same sense of impending chaos that drives my brother, yet not so much that I'm overwhelmed by it as he is. I often consider how similar he and I are, and how I so easily could have been him, or he me.

So it was this shared desperation for order that drove me into science, and later into the craft of fiction. Like my old raincoat, science and art allow me to immerse myself in nature's order while they insulate me from nature's chaos. As scientists we invent perfect models in which phenomena are supposed to be mathematically tractable; the human construction of science is full of ideal gases, incompressible fluids, frictionless surfaces, and blackbody radiators. Similarly, as artists we filter the complexities of real life into representative texts in which distinct characters are involved in coherent plots evincing meaningful themes. Treating life as theatre and inventing purpose and order, I keep chaos, meaninglessness, and death at bay. My constructions of theory and narrative in my science and art, in this sense, are the same sort of protective gear as the impermeable coat that I once wore to primary school: they hold nature at arm's length, close enough so that I can make some sense of it, but far enough so that I won't be overwhelmed.

My work has taught me that this notion of protection goes a long way towards explaining how people construct theories of the world, and how they behave so as to reinforce those theories to gain a sense of control over their surroundings. The drive to separate oneself from the outside world is basic to human psychological development. As mortal and limited beings who are capable of contemplating the eternal and the unlimited, we are faced with a fundamental tension. To resolve it we construct barriers against the world's chaos, defenses that allow us to forget that we are doomed to be overwhelmed by that chaos. (We could read clothing in general as one such defense -- and it should be no surprise that it features in many creation myths, including the story of Adam and Eve, who immediately clothed themselves after eating from the Tree of Knowledge.) People with autism share this universal human desire to control one's surroundings. What differs for them is the intensity with which these surroundings impinge on them. Abnormal neural connections within autistic brains may lead to abnormal perception, increasing the salience of individual events but sabotaging the ability to connect these separate pieces into more abstract representations.

To understand how such a fragmented perceptual world is experienced, I often imagine life as a film being screened in some Cartesian theatre by an incompetent

projectionist. Perhaps the volume is so high that none of the dialogue can be heard above the hiss of noise, or perhaps the aperture setting causes one bright corner of the picture to drown out all the rest. If I can rewind the film and play it again and again, though, I can gather a bit more information each time I watch it, until I understand all of it.

The rigid and repetitive behaviors of people with autism, then, begin to make sense when we consider them as the normal reaction of a human mind to a very abnormal sensory environment, rather than as direct symptoms of an illness. They are what a person with autism does in order to force a chaotic world to follow a predictable script. We are all trying to impose a narrative order on what may seem a fundamentally chaotic world. The difference in autism is that there's much more chaos to be controlled. In this regard, I like to describe people with autism as "human, but more so." The study of autism can tell us a great deal about how abnormal psychology can be explained as a rational, if extreme, human reaction to a crazy world.

On a stereotypically rainy English day, I still enjoy a ramble through the countryside. Trudging through the rain helps to gel my thoughts about science and life. As I squelch along footpaths, I consider that each raindrop is an observation in itself, and I marvel at the task of comprehending the storm without drowning in it.