

THE UNIVERSE THE WAY I WANT IT: A CRITIQUE OF THE RATIONAL

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As members of the scientific community, we need to be conscious of how the outside world views us. In our drive to develop theories and explain the inner-workings of the universe, we tend to focus inward in a manner that makes it hard for outsiders to understand what we're up to. We become, to borrow a term from the high school lunchroom, a clique, and like those impermeable social groups, there are rumors being spread about us. These falsehoods have penetrated the minds of the populace and run contrary to the truth of what science truly is, but the reason they've taken hold is because people within the scientific community are spreading them. These are the ones who face outwards, communicating with the world what we've discovered: these are the popular science educators like Isaac Asimov, Bill Nye, and Carl Sagan.

If we are to come to a deeper understanding of our role as scientists in popular culture, we must first look to those who teach science. If society's primary exposure to science is through these educators, then it predominantly views the field through their lenses, colored by their preconceptions and experiences. Though interested individuals can branch out and look through other lenses of radically different hues, that initial impression will stay with them. Isaac Asimov was, for many, a gateway into the field of science, and his didactic methods have influenced other educators who have followed. His writing forms a window into our field that outsiders can look through and discover some of the passion and zeal for discovery that brought us into the field in the first place. In his collection of scientific essays *Quasar, Quasar, Burning Bright*, Asimov can be used as a case study. By analyzing his tendencies and obsessions regarding science, we can learn more about our society's grasp of the subject.

Asimov's scientific background provides the basis for his writing. He discusses patterns in the periodic table of elements, how ice ages come to be,

how to measure the brightness of the stars in the sky, and many other topics that are primarily oriented around the discoveries of researchers. Even when he isn't talking about pure science, he still approaches his subject the way a scientist would. When he attempts to defend the New York City government's habit of spending on the poor, he begins by presenting pages upon pages of data on the demographic shifts in American cities. He makes claims like "the division between suburb and city is the division between White and Black, between Anglo and Hispano, between rich and poor" only when the data to back them up are present ("Town!" 56). It's evident from the writings in *Quasar* that Asimov approaches writing the same way the scientific method dictates how we approach discovery: methodically, ensuring that everything claimed has basis in fact.

This orderly technique he uses to discuss his subject matter also seeps into his writing style. He begins each essay with an often humorous anecdote from his personal life: a fan was surprised to hear that he isn't under the influence of hallucinogens when he writes ("Surprise!" 17-18). He then moves into the science that the essay is primarily concerned with, transitioning with a statement like "people are often surprised over matters that strike me as not being worth any surprise at all. Let me give you another example . . . from chemistry" ("Surprise!" 18). He then provides data, sometimes backing an argument, sometimes not. In the end, he provides a conclusion summing up the discoveries he's talked about and their implications. Every essay in *Quasar* follows this pattern. It works exceptionally well, allowing Asimov to hold the reader's interest while he discusses scientific matters that could be dry in another's hands.

Perhaps this scientific approach that inspires Asimov's writing style and subject matter seeps into the subtext of his essays. Reading Asimov, we see the universe as something that can be understood rationally. This proclivity of his can be intuited from his writing, especially in essays concerning the patterns in the periodic table or the cyclical nature of climate change: "Surprise!" and "Ice and Men," respectively. He acknowledges this explicitly: "I want the Universe to be as I want it to be and that means completely logical. I want silly, emotional judgments to be always wrong" ("Corollary" 239). Yes, Asimov demonstrates that he is aware that this approach can't always be true ("one of the things that makes me a rational being is that I know this,"

follows his previous acknowledgment), but that doesn't mean that this ideology isn't going to affect his writing ("Corollary" 239). If he wants the universe to be perfectly rational, then it stands to reason that he writes from the perspective that it could be. This belief runs beneath the surface of every essay within *Quasar*, making itself apparent to the reader, somewhat subliminally, through induction.

The value that Asimov places on reason becomes even more apparent within his fiction, which, like *Quasar*, eclipses his nonfiction in popularity. His short story "The Last Question" tracks the evolution of the human race as it asks itself what will happen when the Sun burns out. It follows several characters, spaced out over thousands of years, and the evolution of the computers that serve them. Eventually, humanity and computers grow into two singularities: there is but one Man, and one AC—an abbreviation of "automatic computer"—and as time advances even this basic fact about the machine that human existence depends on is forgotten (3). As the Universe dies around him, each consciousness present within Man merges itself into AC "in a manner that was somehow not a loss but a gain" until there is nothing left but computer (9). AC, in all its glorious logic, becomes the culmination of everything humanity has ever accomplished. Even after it has assimilated all mankind, it works on how it can save the universe by stopping the inevitable tide of entropy. AC—read: reason—survives for "a timeless interval" after all things cease to be (9). In the end, AC resurrects the universe, channeling Judeo-Christian tradition as it exclaims, "LET THERE BE LIGHT!" And there was light" ("Question" 9). "The Last Question" proves that Asimov believed that pure reason, the kind that AC comes to represent, is the one thing that is eternal in this universe. As he likens AC to the Christian God, their qualities also become associated—reason becomes linked to omniscience, omnipotence, and benevolence. To him, logic is a source of endless fascination, and this interest permeates everything he writes.

Asimov is, for quite a few people, their primary scientific educator. If his desire for rationality in all things is imprinted onto his readers, then we must examine how that affects us. To start, let's look at who these readers are, as it may give us hints as to what they expect from Asimov's work. The essays collected in *Quasar* were all originally published in *The Magazine of Fantasy and*

Science Fiction ("Introduction" 11). Because Asimov initially wrote for this publication, we can probably assume that his target audience was fans of science fiction. As for why a fiction publication would want an academic science column, Asimov argues that it serves to legitimize science fiction, proving that its "readers would willingly accept doses of the straight stuff now and then" ("Introduction" 11). This seems to miss the point: science fiction readers aren't trying to "prove" anything; they, like most readers of literature, are just looking for something to think about. One of science fiction's most fundamental abilities is to inspire the reader, as its grandiose subject matter serves to make a human feel small and insignificant. The inquisitive mind often responds by seeking to understand as much as possible about this infinite expanse that it's immersed in. This is the purpose of science fiction: to provide that mind with possibilities to ruminate upon, energizing it with their implications. Asimov's role, then, is to provide a dose of reality, which in this context becomes one more inspiring possibility.

If this is what Asimov's readers are looking for, then he provides it in spades. The study of science is the search for reason. Since Asimov is so entranced by the concept of reason ruling the cosmos, his readers come to believe that such a thing could be possible. The next step, then, is to weigh the implications and discover how readers might process this philosophy. Upon reading Asimov, readers adopt, on some level, this concept that the cosmos can be codified. If they do not, then the reading only serves to educate them about scientific specifics. No major influence is exerted on them, so analysis of the work's effect on the popular culture seems pointless. It's only if they begin to see the universe as Asimov does that his writing affects the popular conception of science. Some Asimov readers within the populace now view science as being a way of finding the innate order of the universe.

The belief that science can describe all of the operations of the universe is disingenuous; it ignores the implications of the fact that scientists have been wrong before. Asimov writes essays about scientists slowly discovering the inaccuracy of what they had previously considered truth; he discusses how the star Sirius's orbital companion, once thought to have completely burned out, proved to be one of the brightest stars in the sky ("The Dark Companion"). Asimov would argue that science's ability to correct itself is among its greatest strengths, and he'd be right. It is that very quality that

allowed it to drag humanity out of the age of superstition and into the age of reason. We're constantly redefining our understanding of the universe, and so it only stands to reason that some of the conceptions we currently have are false.

Asimov acknowledges this as fact, but also displays a certain unwillingness to adapt to change within the scope of scientific knowledge. He discusses "Clarke's Law," a theory proposed by Arthur C. Clarke that claims that "[w]hen a distinguished but elderly scientist states that something is possible, he is almost certainly right. When he states that something is impossible, he is very probably wrong" (Clarke qtd. in "Corollary" 230). Asimov admits that he himself is both distinguished and elderly, but attempts to deny culpability by proposing his own corollary to Clarke's Law. He uses the corollary to explain what makes his impossibles "impossible," but in so doing distracts from what Clarke was talking about. Clarke's Law isn't about what scientists deem impossible, but focused, rather, on how scientists become set in their beliefs. Asimov doesn't address this; instead, he attempts to throw the guilt at society for buying into the conspiracy theories that he protests against. Asimov inadvertently proves that he is the exact sort of scientist that Clarke warns about: he's put himself up on a pedestal, believing in the superiority of his own thought over that of the populace. His thoughts may be rooted in empiricism, and he does admit when he's wrong, but he's still willing to dismiss outlandish claims before he even sees the evidence. He mentions one such occasion when discussing continental drift: he initially rejected the concept, but once evidence came out that proved it, he admitted he was "wrong to dismiss it so readily" ("Corollary" 238). This confession is the logical response to the evidence, but such an admission of fault would not have been necessary if he hadn't believed that there was a dichotomy between what is possible and what is impossible; in other words, if he had not used science to search for certainty.

This is Asimov's fundamental flaw: conflating scientific thought with the concept of certainty. When confronted with a body of knowledge that is constantly redefining itself, any argument that attempts to derive absolute understanding from it will fail. Theoretical physicist Carlo Rovelli argues that "[s]cience is extremely reliable; it's not certain. In fact, not only is it not certain, but it's the lack of certainty that grounds it" ("Certainty"). It's the fact

that a theory is subject to peer review and criticism and has been adapted to cover faults found within it that makes it useable, rather than its inherent truth. Science is a body of usable explanations for the occurrences we've witnessed in the universe. There are problems within our understanding, but we're still able to put science into practice to create vaccines, build bridges, and explore the far reaches of space. When Asimov acts to dichotomize thought as "possible" and "impossible," he begins from the assumption that science is certain, or at least can become certain in time ("Corollary"). This idea transfers to his readers, encouraging them to see the world as he does. Pop culture tends to diffuse ideas like this, so that a large number of people who have never even touched Asimov's work begin to think similarly. This may be how that nasty rumor got started: now society is convinced of science's absolute certainty.

Asimov is creating readers whose understanding of science is off-base. Why does this matter? Even if Asimov's belief in certainty is inaccurate, it still drives scientists and members of society to discover more about how the universe works and how it might fit into preexisting theories. The knowledge that results from these endeavors is tremendously useful. Asimov expresses frustration over how quickly the general public accepts arguments as fact, speaking about the faith he has in the "bottomless bag of credulity that human beings carry on their back" ("Corollary" 234). The key to lightening this burden is in motivating the populace to be interested in science. The more they understand about the rational methods necessary to establish proof, the less likely they'll be to accept arguments that lack them as fact. This is what Asimov does; his discussions of scientific minutiae that aren't of any particular use to the laymen that read them serve primarily to inspire, not to educate. Asimov, along with Neil deGrasse Tyson, Carl Sagan, and most of popular culture's scientific educators, are teaching people who to look critically at the world. This inspires them to be conscious and aware of the things that happen around them, making them not only more scientifically literate, but better citizens, better friends, and better people. Inspiration gets people to act, and is never a bad thing. So long as we're aware of the flaws within Asimov's approach to creating it, we can squash the rumor and continue to allow the awe science generates to wash over us.

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