

**- A Look into Darkness -  
The Conflict of Being a Scientist and a Human**

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## A Look into Darkness – the Conflict of Being a Scientist and a Human

Following the proposition that creativity springs from the collaboration of disparate fields, the works of *Faust* by Goethe, *The Physicists* by Dürrenmatt, and *Copenhagen* by Frayn are creative in the way they masterfully bring together humanity and science in the dramatic form, using the style and structure of the art form to enhance the ethical and scientific message. A thematic thread that links these works together is their exploration of the darkness that can exist in the mind of a scientist – a darkness which can shroud ethical thinking and separate the scientist from the human. The source of this darkness is examined in *Faust* through the character of Dr. Faust, while the three scientists of *The Physicists* showcase the daunting ethical struggles that scientists must deal with, and finally the decisions and consequences of a scientist is explored through *Copenhagen*. By striving to understand this darkness, we can better understand the intrinsic conflict in being a scientist and a human.

The legendary character of Dr. Faust, a figure rooted in mythology among the cultures of Europe, helps provide an understanding of why a scientist can be driven to unleashing the dark side of science. In the beginning of the first part of the tragedy, Faust is shown as a frustrated man unsatisfied with his experiences in life, shown in one of his early rants:

“ I gathered up and piled up high  
in vain the treasures of the human mind:  
when I sit down at last, I cannot find  
New strength within – it is all dry.

My stature has not grown a whit,  
 No closer to the Infinite.” (Goethe 1810-1815)

He is a doctor, a learned man who has studied science, medicine, and theology and yet still thirsts for further knowledge, for deeper insights into his world. Faust strives to know the place and role of mankind amidst the universe of hell, heaven, and the Earth. It is a scientist’s profession to find knowledge, to understand the natural world, and having an innate curiosity is healthy motivating factor. Faust, however, takes this factor to the extreme and allows it to consume him, thus transforming it to a force that is destructive to both him and ultimately society. The path he chooses is that of sorcery, necromancy, and devilry – elements that are in direct opposition to the rational and grounded framework of science. With the aid of the Devil’s servant, Mephisto, Faust wields the power to experience life in ways unimaginable to a regular man. In this way, Faust also moves farther and farther away from humanity, so far in fact that in one of the most tragic scenes of the play Faust cannot even discern the most basic human emotion of love:

“Leave off! It will. – When, lost in feeling,  
 For this urge, for this surge  
 I seek a name, find none, and, reeling  
 All through the world with all my senses grasping,  
 At all the noblest words I’m grasping” (Goethe 3059-3063)

The darkness that Faust taps into in his mind through his extreme practice of ‘science’ pushes him away from humanity, and ironically, prevents him ever finding the solution to the question he most wants answered. It represents the danger of science without restraint, the hazard of searching for knowledge despite the consequences. But

what pushes a scientist to fall, or even worse leap, off the ledge into the abyss? Perhaps greed for glory and fame, which influences James Watson in *The Double Helix* to conduct shady practices just to be the first to crack the code of DNA. Perhaps it stems from an aching desire to prove oneself to oneself. In Faust's case, it is the frustration of not achieving both through science alone. To Faust, the toolbox science has failed him in his quest for knowledge, as he laments:

“You instruments, of course, can scorn and tease  
With rollers, handles, cogs, and wheels:  
I found the gate, you were to be the keys;  
Although your ways are subtle, you cannot break  
the seals.  
Mysterious in the light of day,  
Nature, in veils, will not let us perceive her,  
And what she is unwilling to betray,  
You cannot wrest from her with thumbscrews,  
wheel, or lever. (Goethe 668-676)

Delving into history however, this argument, though understandable, does not lend much validity. One of the many essences of science is its constantly evolving nature, and the creativity that lies within. Isaac Newton lacked the ability to understand the true nature of light, but later the work of Young and Maxwell was able to describe it. Aristotle lacked the means to understand the Solar System's setup, but with Galileo's contribution of the telescope new breakthroughs became available. Even today, scientists are discovering new methods and unlocking new tools in the strangest places that can help us further understand our world. Faust despaired when he alone could not accomplish his goal, and

through desperation he made choices that ultimately failed him. This opens the question, however, of what course of action is available to one who *has* found the all mighty tool, who has discovered the forbidden knowledge? This question is pursued in *The Physicists*, by Friedrich Dürrenmatt.

If Faust explores why a scientist can be driven to forsake humanity, *The Physicists* examines the choices a scientist can make and the ethics behind it. In many ways, Dürrenmatt's play is all about choice. Möbius makes the choice to hide away in an asylum pretending to be mad, as well driving his former wife and kids away. All three physicists make the choice to kill the nurses who love them. And finally, Alec Jaspar Kilton and Joseph Eisler, who pretend to be Newton and Einstein respectively, make the enormously difficult choice to remain in the asylum for the rest of their days. What drove these men to make these choices, and are these choices ethical? Let us first focus on Johann Wilhelm Möbius and his decision to seek refuge in an asylum. Möbius, as a scientist, formulates the Principle of Universal Discovery and the Unitary Theory of Elementary Particles which prove to be the most powerful revelations of the universe ever realized by man. Möbius immediately visualizes the consequences -- "The result is – devastating. New and inconceivable forces would be unleashed, making possible a technical advance that would transcend the wildest flights of fantasy if my findings were to fall into the hands of mankind."( Dürrenmatt 75). After rationally determining the safest course of action, Möbius declares that the ghost of King Solomon speaks to him, and he promptly enters an asylum, where he believe his findings will be safe from exploitation. However, as it has been said, thoughts cannot be un-thought, and Möbius' discoveries fall into the wrong hands. Regardless of the path Möbius were to take, his discoveries would have been made

public, so did Möbius do the right thing? The latter half of the play features great intrigue and interest as Kilton and Eisler reveal themselves and talk with Möbius trying to convince him to join their side. Representing two rival political systems, each offers their own alternatives that Möbius should consider. Kilton believes in the pure scientific ideal, of discovering knowledge for the sake of knowledge. He tells Möbius, “I know there’s a lot of talk nowadays about physicists’ moral responsibilities. We suddenly find ourselves confronted with our own fears and we have a fit of morality. This is nonsense”(Dürrenmatt 76). Einstein, in contrast, views science as intertwined with politics, for he sees the great influence that scientific discovery has on the fate and states of nations. He states, “We are providing humanity with colossal sources of power. That gives us the right to impose conditions. If we are physicists, then we must become power politicians. We must decide in whose favor we shall apply our knowledge”(Dürrenmatt 76). What both of them fail to understand is that one cannot follow one system or the other, for neither fulfills the total responsibilities of a scientist. As a human first and a scientist second, Möbius declares that “there are certain risks that one may not take: the destruction of humanity is one”(Dürrenmatt 80). He surrenders himself into a mad house because he realizes that with his discoveries, humanity would no longer be in step with science. He tells Kilton and Eisler “our knowledge has become a frightening burden. Our researches are perilous, our discoveries are lethal. For us physicists there is nothing left but to surrender to reality. It has not kept up with us”(Dürrenmatt 81). From this perspective, it appears that Möbius did do the right thing, because he acted to preserve humanity. The flaw is that he failed to consider what events would transpire if his secrets became exposed while in the refuge of the asylum. Considered insane, Möbius would have no power over his work, and no power

translates into no control. Though he believes he is taking responsibility for what he has uncovered, he is in fact running away from it. As the audience sees at the climactic end, this is in fact what transpires. Rather than make the attempt to light a torch against the darkness his discoveries would spread, Möbius avoids it. In an irony similar to that seen in *Faust*, the path that Möbius takes is the very path that takes him the farthest from his desired goal. Dürrenmatt leaves little clues to the devastation that Doctor van Zahnd, the corrupt psychiatrist in charge of the asylum, wields upon the world, but playwright Michael Frayn in *Copenhagen* plays off the audience's knowledge and his own grim details when tackling real and tangible weapons of mass destructions – nuclear weapons.

At the heart of the play is the burning question of why Werner Heisenberg visit Niels Bohr in Copenhagen in the fall of 1941. Why did the head of German science and the German Atom Bomb Project visit his half-Jewish old friend and mentor in Nazi-occupied land? One thing is for sure, neither man could speak to one another after that fateful meeting. *Copenhagen* takes place in the past, the present, and that night in 1941. The choices have already been made and the consequences already seen. Regardless of the histories the characters of Bohr, Heisenberg, and Margrethe choose to alter in their minds, the general course of history will not be changed. As Heisenberg says, “decisions make themselves when you're coming downhill at seventy kilometers an hour. Suddenly there's the edge of nothingness in front of you. Swerve left? Swerve right? Or think about it and die?”(Frayn 25). This is the harsh reality that scientists must contend with, for as this play and *The Physicists* show, what scientists accomplish can have an enormous impact on humanity. The question that Heisenberg presents to Bohr is one that *Copenhagen* as a whole wants to ask to the scientific and political community – does “one have the moral

right to work on the practical exploitation of atomic energy?”(Frayn 36). This question, and the consequence thereof, is handled in different ways throughout the play. On one hand, Heisenberg and his team were practically being forced to exploit the energy of the atom – Heisenberg could have posed the question to receive an absolution from his mentor. If they delivered the weapon, then Hitler would have become frighteningly more dangerous. In not delivering the goods, what instead was the consequence? The reputation of German science was tarnished, for they did not achieve what American science accomplished. Despite their failure to construct the world’s most deadliest weapon, Heisenberg bitterly recalls that “hands that had actually built in the bomb wouldn’t touch mine”(Frayn 47). It is easy to understand Heisenberg’s frustration. The American and refugee Jewish scientists achieve the unthinkable, and they are praised and honored, and after the war he sees Allied science programs grow and flourish. What is he – what is any scientist in a similar position to do? Unlike Möbius, Heisenberg claims to have made effort to stay in control of the situation, yet was it for the right reasons? He admits himself that in the end the program to construct a nuclear reactor consumed him and dispensed his mind of any rational safeguards or questions of conscious – the same ‘darkness’ that overcome Dr. Faust. Heisenberg also says several times that he stayed in Germany in order to rebuild German science to the glory that it once was. Bohr went to America and aided the Allied bomb effort in order to stop the undoubtedly evil Nazi regime. In the end, history favored the latter. Heisenberg’s position during the second World War is certainly one of the most awkward for any scientist to be in. Ultimately, however, *Copenhagen* seems to suggest, though it clearly leaves this open for interpretation, that the best consequences from a historical standpoint come from one being responsible towards humanity above all.

As complicated and often overwhelming the task of understanding the ways of the universe may be for a scientist, a similar if not greater task lies within the mind. It saturates the conscious, penetrates the rational, and feeds off the emotional. The one thing that every scientist must always remember is that they are a human first, a scientist second. The oft-revered occupation of being a scientist conflicts with being a human. It is this conflict that creates the darkness within – it is this conflict which challenges a scientist to choose one or the other, science or humanity. Faust could not pierce this cloud, and Heisenberg became lost in it as well. Möbius on the other hand became obsessed in observing it, thus was derailed in his noble efforts. We must recognize that this necessary burden exists within us all, to take responsibility for our discoveries by working to have a degree of control in its implementation, and to always keep in mind humanity above all else.

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