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م.سعاد حسين علي
الجامعة العراقية / كلية الآداب, alkhafajisuaad@yahoo.com

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**From the Atomic Bomb to Covid-19; The Ethical
Responsibility of Scientists: A Thematic Study in
Friedrich Durrenmatt's *The Physicists***



م.سعاد حسين علي
الجامعة العراقية / كلية الآداب
alkhafajisuaad@yahoo.com



ملخص البحث

من القنبلة النووية الى كوفيد تسعة عشر: المسؤولية الاخلاقية للعلماء: دراسة موضوعاتية في مسرحية فردريك دورمانت (الفيزيائيون) عندما نفكر بالمسؤولية الاخلاقية الواقعة على عاتق العلماء, يتبادر الى الذهن احد الاعمال الادبية للكاتب السويدي فردريك دورمانت (الفيزيائيون) والتي كتبت في وقت اختراع القنبلة النووية. ناقشت المسرحية موضوع الصراع الانساني فيما يخص التطور العلمي وعلاقته بالمسؤولية الاخلاقية للعلماء. والان وتحت تأثير التفشي الحالي لوباء كوفيد تسعة عشر عادت نفس القضايا والتساؤلات لتطرح نفسها بقوة خاصة بوجود النظرية التي تدعي بتصنيع وتطوير هذا الفيروس في المختبرات من قبل العلماء لغرض السيطرة على العالم كما حدث عند اختراع القنبلة النووية. تسلط هذه الدراسة الضوء على حقيقة ما يجب على العلماء فعله من اعادة تقييم ومراجعة جميع الواجبات الاخلاقية المترتبة على نتائج اكتشافاتهم وتجاربهم والتي من الممكن ان تكون لها اثار مدمرة و كارثية على البشرية. يناقش البحث ايضا المسؤوليات الاخرى التي طرحتها المسرحية والمتعلقة بالحكومات والاحزاب السياسية والتي يجب ان تلزم وتحاسب و تكون مسؤولة عن جميع اعمالها.

Abstract

When contemplating the moral responsibility of the scientists in the age of nuclear energy, one of the literary works that comes to mind is Friedrich Durrenmatt's The Physicists written in the wake of the atom bomb which deals with one of the humanity's strongest tension between scientific progress and morality and accountability. Under this light, the recent outbreak of the Covid-19 raises similar questions especially when examining the theory that this virus was enhanced in a lab by scientists for the purpose of wielding power similar to lab-manufactured atomic bombs and without those scientists' regards to moral responsibilities. This paper seeks to shed light on the fact that scientists should reassess their moral duty when involved in discoveries and experiments that may have catastrophic outcomes and threaten humans and other species living on this planet. This responsibility does not end here, however, and the play suggests other parties such as governments and political lobbies should be held accountable as well.

Keywords: Friedrich Durrenmatt, The Physicists, Responsibility, Scientists, Atomic bomb, Covid-19

General Overview

Friedrich Durrenmatt (1921-1990) is a twentieth-century Swiss playwright who is well-known for his satiric and tragic-comic drama that reflects the world after the Second World War. The historical events of the century have left a strong imprint on his work like: World War II, the Holocaust, Hiroshima, the rise of Soviet and American superpowers, and the start of the nuclear standoff. *The Physicists* is considered Durrenmatt's timeless classic that touches on many themes like science, ethic and responsibility which were important at the time of post-war audience and till today.

The play premiered in 1962, in Zurich. In 1963, the play was performed worldwide. In *The Physicists*, Durrenmatt wants to expose the paradox of twentieth century, the time that generally assumed to be a peak of reason and science. He tries to show how man could be a sinner of the most barbaric crimes under the cover of scientific and social progress. *The Physicists* is based on the 1945 atrocities of Hiroshima and Nagasaki. The play deals with the breakthroughs of nuclear weapons and the duty of the scientists towards humanity, a subject that is well situated for the Cold War period and which is still relevant today.

In his play, Durrenmatt arouses many inquiries about the ethical dilemma of modern science, in the age of extraordinary technological accomplishment. The play is also well situated to the world contemporary issues. By exploring and analyzing this play and also the issue of 2019-2020 pandemic and the governments' misuse of technology, especially in the field of biotechnology, the paper attempts to raise and answer questions such as: Are there things that we should not know? Or can the search for truth ever turn up to be immoral? Can the scientists be held responsible for the harmful effects of their discoveries when abused by power-hungry

? How does if a great destructive power fall in the hands of the insane?

Durrenmatt's play is motivated by Robert Jungk's polemical history of modern atomic science, *Brighter than a Thousand Suns :A personal History of the Atomic Scientists (1958)*. In this book, Jungk discloses the moral indifference of many scientists who were eager to more researches about nuclear energy without paying attention to the bad consequences that are going to affect human life and environment.

Science should have a strong relation with ethics including ideals, virtues and responsibilities. These responsibilities evoke inquiries whether scientists should avoid pursuing some topics that seem likely to have undesirable results. God forbids Adam and Eve to eat from the tree of the knowledge of good and evil. When they disobey, He expels them from paradise to be faced with all the horror, yet also the goodness of this world. The idea of 'forbidden Knowledge' is always mentioned by religious thinkers to denounce what they see as unpleasant researches, this expression has been converted from religious to secular use, but it continues to sound with danger as it moves away from divine authority towards democratic and fallible authority.(Martin,2008,75)

The right to know or ' freedom of inquiry' must be acknowledged in any just society, to solve technical, medical and educational problems. But sometimes knowledge may be abused and corrupted. Thus, it would be a necessity of evoking the matter of social responsibility of the scientist, meaning that forbids particular kind of research because it may be used for terrible purposes, such as the research in nuclear physics that leads to knowledge that is immoral (Smith,1978, 30-35).

The Physicists : Discussion

The play tells the story of three nuclear physicists who confine themselves to a mental asylum. One of them thinks himself Newton, the other believes himself Einstein and the third one, Mobius, claims that he is frequently visited by King Solomon who appears before him to tell him the secrets of the physics. However, all the three are nuclear physicists who fake insanity, and one by one all the three turn to be killers.

The play opens in a Swiss sanatorium when the police inspector arrives to investigate the second murder crime, as the first one took place in the asylum three months ago. Dr. Von Zahnd, the psychiatrist of the sanatorium tells the inspector that her patients cannot be held responsible on the crime because of their insanity. Einstein admits killing the nurse and goes to calm himself by playing violin.

As the play progresses, physicists' murdering for nurses becomes recurrent habit, as the third crime takes place When Mobius kills the nurse that gets too close to him. The physicists see these crimes as tragic scarifies since the death of these nurses seem necessary for their purposes of saving the world and serving their countries. From the very beginning of the play the theme of ethical responsibility of the scientists emerges and rises questions in the audience's minds as what is the difference between helping create atomic bomb by the scientists' theories and the direct killing of the nurses by these scientists? Or sacrificing the few for the benefit of the many is a legal act? All these inquiries have given negative impressions concerning ethics. The basic responsibility of the scientists to use their knowledge to improve the quality of life. They have a duty to achieve good if it can be done at no great price or sacrifice.....This common duty situates special responsibilities on them to supply the public with scientific information relevant to

their good, as well as to avoid participating in scientific research on behalf of immoral causes. (Martin, 2008,71)

Mobius is the scientist who solves "the problem of gravitation," (TP,75) and discovers the "Unitary theory of Elementary particles" (TP,75), and the principle of universal Discovery" (TP,75), and now he is a patient in the lunatic asylum. Mobius decides to renounce his responsibility and withdraws himself from the world claiming insanity in order to hide the results of his researches and save the world. Newton and Einstein are CIA and KGB rivals who spy on Mobius to get his researches. Durrenmatt uses famous names that are recognized by the audience and are connected with political events which indicates the potent mixture of science and politics.(Shepherd-Barr, 2006,62)

Whitton, in his book, *On Durrenmatt's Theater*, suggests that "the play is not a political statement but rather a sort of modern morality play," the opinion that is rejected by Northcott who asserts that "in Durrenmatt's writing politics, social responsibility, morality and ethics are so closely interwoven" (Northcott,2006) .The protagonist of the play, Johan Wilhelm Mobius appears for the first time in the play, to say forever- goodbye for his ex-wife and three sons, Durrenmatt depicts Mobius as a victim who sacrifices his life and his family in order to save the world. Mobius expresses his regret for being a scientist in the field of physics and warns his son to be one:

Jorg-Lukas: I want to be a physicist, Papi.

Mobius stars at his youngest in horror

Mobius: A physicist?

Jorg-Lukas: Yes, Papi.

Mobius: You mustn't, Jorg-Lukas. Not under any circumstances. You get that idea right out of your head. I—I forbid it!

Jorg-Lukas: But you became a physicist yourself, Papi—

Mobius: I should never have been one, Jorg-Lukas. Never.

I wouldn't be in the madhouse now. (TP,39-40)

Durrenmatt agrees with the mathematician David Hilbert who says: " physics has become too difficult for the physicists." (Matlack, 2012). Durrenmatt says that the scientists reached a limit. And he shows this idea when Mobius speaks to his colleagues physicists, Newton and Einstein in the madhouse, " Our knowledge has become a frightening burden. Our researches are perilous, our discoveries are lethal."(TP,81)

In her book about the scientists in the western culture, Roslynn D. Haynes states that: "From 1950 to 1980 writers more commonly depicted scientists as being idealistically engaged in struggle with state authorities or commercial organizations in an effort to ensure that their research was not used for destructive purpose." (Haynes, 2017,301)

Durrenmatt's concerns are the product of the Cold War period, but they are also timeless. The main themes are the social responsibility of scientists ,passivity, greed and political corruption which reflect the fear and paranoia that surrounded nuclear physics. Mobius is horrified that his researches will be abused by unscrupulous governments. The same anxieties continue today, particularly in the field of biotechnology: "recently, there's been controversy about the bird flu virus, as scientists have engineered the H5N1 strain to pass between mammals." (Barnett,2012) Besides what the world is facing today of universal pandemic ,as many scientists are becoming convinced that Corona Virus is not a natural virus from the original Corona family. Rather, it is a manipulated virus that is loaded with special weapons to face humans. The well-known Norwegian virologist Birger Sorensen and his colleagues believe that Corona Virus has certain properties which would not evolve naturally. Sorensen states that: " I understand that this is

controversial, but the public has a legitimate need to know, and it is important that it is possible to freely discuss alternate hypotheses on how the virus originated." (Minerva, 2020) The danger of a manmade pandemic sparked by a laboratory escape is not hypothetical: one occurred in 1977, and it occurred because of the concern that a natural pandemic was imminent. Many other laboratory escapes of high-consequence pathogens have occurred, resulting in transmission beyond laboratories were working with pathogens to prevent the very outbreaks they ultimately caused (National post.com, 2020). Playing with the genetic material of viruses is both old and new technique, some scientists use it for therapeutic purposes, and some of them use it as a biological weapon. In 1945, nuclear bomb was dropped on Hiroshima, and it weight 4.5 tones. Nowadays, no need to use bombs anymore, they can wage their wars and beat their enemies through small virus. In fact the scientists have exceeded their limits, they want to change the entire world according to their authorities and their own desires

In his review of Jungk's book *Brighter Than a Thousand Suns* , Durrenmatt shows how Hitler's theory of races ruined the internationality of science, so that physicists suddenly found themselves pitted against each other. Out of a fear that Germany was manufacturing a bomb-which later turned out to be unfounded-Einstein recommended to president Roosevelt that the United States construct one as well. Durrenmatt says that the physicists failed by not acting in unity and by delivering themselves up to politicians and military men in whose hands their theories became unstoppable once they had been uttered. Now, nuclear power is at the disposal of those who don't understand it. (Matlack, 2012)

Today, the history repeats itself when the scientists do not unite to face the universal pandemic and when they disagree to work

together as one team to make a vaccine that is going to save humanity. Each one works for the benefit of his own country and submits to his authorities that have obviously kept other plans which seem more important for them than saving the world. The unscrupulous governments start to compete each other for political and economic purposes on expense of humanity. Those governments neglect the moral significance of science and the personal commitments of the scientists. The scientists' responsibility appears in a such situation of being responsible and loyal only to the science not to their own countries and governments, and that what Mobius asks his fellow physicists to do in the play. Scientists always do good for humanity when their scientific contributions emerge from their moral commitments.

Durrenmatt examines the dark side of science, not only in *the Physicists*, but also in his other literary works, for instance, in his play *The Collaborator* 1973, he explores the manipulation by industry of a biologist, the protagonist of this play is a scientist who begins his career as an idealist, eager to discover new knowledge then he turns to be murderer who loses control over his own discovery (Haynes, 2017,295). This dark side of science shows some scientific researches which are able to be understood in terms of greed, arrogance and destructive ambition. These kinds of researches may be combined with fatal mistakes that could destroy the whole world.

Durrenmatt compares the Cold War period to a madhouse which is full of lunacies who compete each other to be the first winner in the arms race. As it is mentioned before in this study, *The Physicists* comes as a response to the invention of the atomic bomb. At that time, it was not hard to imagine the world at any moment where millions of people could be wiped down without warning at the push of a button . That was a reality during the Cold War period as USA

and SU faced each other. Each knew that the other possesses the nuclear weapon and able to destroy the other. Mobius persuades the two physicists, Newton and Einstein to stay in the asylum and leave their allegiances , he wants to reminds them of their moral commitments as scientists, he asks them to be loyal not to a country but to physics , he begs them saying: "Either we stay in the madhouse or the world will become one" (TP,82). Mobius compares the immoral and helpless scientists to wild beasts, he says; "We are wild beast. We ought not to loose on humanity(TP,83).

Durrenmatt shows Mobius as a helpless scientist who wants to release himself from his responsibility. However, Mobius also shows his courage and honesty when he tries to save humanity from his own discovery by sacrificing his life and his family. The idea of the ethical responsibility of knowledge is gravely situated in this play. The play criticizes the scientists but not opposites them. The scientists are sympathetic but politically naïve in overestimating their ability to control how their knowledge is used. Newton as a (CIA) member is untroubled about ethics and presents the Western standpoint saying: "It's nothing more or less than a question of the freedom of scientific knowledge.....whether or not humanity has the wit to follow the new trails we are blazing is its own look-out, not ours."(TP,76) While Einstein, who seems to be a communist ,states that he is above all committed to his state, "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" (TP,76).

In showing Mobius as a helpless figure, Durrenmatt wants to compare him with J.Robert Oppenheimer, the American theatrical physicist who is often known as the father of the atomic bomb. In his farewell speech, Oppenheimer speaks about the challenges that

scientists and the world faced when the atomic weapons were a reality. He explains his helplessness and that he cannot return to a pre-war, prelapsarian (before the sin) state. He says:

Now we find ourselves living in a world in which people regard the discoveries of scientists with dread and horror, and go in mortal fear of new discoveries. We, the physicists, find that we have never before been of such consequence and that we have never before so completely helpless. We have been doing the work of the Devil, and now we must return to our real tasks. We must devote ourselves to entirely to research again (Manhattan project History, 1945).

Oppenheimer's comprehension of the sin that is never revoked makes him withdraw to pure research. He justifies pursuit of an atomic bomb as inevitable, stressing that scientists must expand man's understanding and control of nature. Oppenheimer differs from Mobius in that he decides to abdicate his responsibility and retire from the world by faking insanity.

The helpless scientist, then, either responsible, when he has failed to predict the dangerous consequences of his work, or a limited hero, when he tries to rescue society from the evil that about to happen but fails because the power against him is very strong (Haynes,2017,298). Mobius, for instance, is faced by the insane Doctor wants to dominate the whole world. Therefore, Mobius has nothing to do only to express his helplessness saying: "What was once thought can never be un-thought".(TP,92)

The idea of unleashing evil become recurrent theme in literary works such as Mary Shelley's *Frankenstein*, Robert Louis Stevenson's *Dr. Jekyll and Mr. Hyde* , and *Goethe's Faust*. In Greek mythology, when Prometheus steals the secret of fire from Zeus, the

latter decides to punish mankind by sending Pandora the first woman who carried a jar was told to never open. Pandora is forbidden to open the jar, but she cannot resist peeking into the jar and by opening it all evil is unleashed into the world (Holand,2006,12-13). The idea of forbidden knowledge and that science is something dangerous for humanity seems old-fashioned, yet the scientific research in modern age has its dark side, when the hunger for knowledge reaches to its sharp edge and becomes unbalanced. The great ambitions to have knowledge and the scientists' competitive nature often overshadows respect for truth and professional responsibilities.

Durrenmatt as a post-war period's writer, shows the cold war period's audience the ethical dilemma that arises when unprincipled politicians abuse the scientific knowledge. He focuses on the competition between the communists and the capitalists in arms race. This competition derives the ethical scientists like Mobius to lock themselves up, and ignore their discoveries.

Durrenmatt's timelessness also appears in the play, since his cold war argument is still valid in the era of global warming. The best example of science betraying moral ideals is what happened in South Korea, " as when South Korean Hwang Woo Suk was exposed in 2005 for faking data in experiments on cloning" (Martin, 2008,61). Durrenmatt focuses on political and ethical responsibility of the scientists at the time of invention of the atomic bomb, "even though the Cold War is over, the potential of the so-called rogue states to develop nuclear weapons still confronts the world with the possibility of chilling future." (Northcott,2006)

When the three physicists finally decide to stay in the asylum and save the world, the play takes an interesting plot-twist ,as Durrenmatt states in his 'twenty-one points about *The Physicists*', point three: "A story has been thought to its conclusion when it has

taken its worst possible turn". Things are further complicated when the physicists discover that the founder of the sanatorium, Dr. Von Zahnd, has been treating them in order to steal their scientific discoveries for her global paramilitary organization, it is the doctor who is insane not the physicists. Doctor Von Zahnd claims that she is "the last normal member of her family"(TP,91) Durrenmatt wants the audience to imagine what will happen when the great power of science falls in the hand of insane people, as Einstein says; "the world has fallen into the hands of an insane, female psychiatrist.(TP,92)

As a psychiatrist , Dr. Von Zahnd is betrayal as she betrays her scientific and professional responsibility when treats her patients like toys she says:"I was a doctor and Mobius was my patient. I could do with him whatever I wished"(TP,89). The character of the insane in many literary works, is often given to a scientist who overwhelms by his scientific researches, while in fact, the real insane is the one who tries to control the world using scientific inventions to have power and dominate society. Dr. Von Zahnd claims that king Solomon commands her "to cast down Mobius, and reign in his place"(TP,89). The insane doctor believes that nobody has the right to hide or keep knowledge to himself, and that Mobius has betrayed King Solomon, the source of Mobius' knowledge, She says:

FRL.DOCTOR: But Mobius betrayed him. He tried to keep secret what could not be kept secret. For what was revealed to him was no secret. Because it could be thought. Everything that can be thought is thought at some time or another. Now or in the future. What Solomon had found could be found by anyone, but he wanted it to belong to himself alone, his means towards the establishment of his holy dominion over all the world.

And so he did seek me out, his unworthy handmaiden.(TP,89)

Durrenmatt criticizes the role of science in western democracy. While Durrenmatt was writing his play, president Eisenhower warned from "unwarranted influence" which represents a threat to American political system .The president's warning has paralleled to Durrenmatt's nightmare, as he states: "We must guard against the acquisition of unwarranted influence, whether sought or unsought, by military-industrial complex. The potential for the disastrous rise of misplaced power exists and will persist." (cited in Matlak,2012) Dr. Von Zahnd is eager to set up the military-industrial complex of whose "unwarranted influence" Eisenhower warned.

FRL.DOCTOR: Now I shall be mightier than my forefathers. My cartel will dictate in each country, each continent.....(TP,91)

Ross Benjamin states: "Among the most chilling and unnervingly funny of Durrenmatt's diagnoses of cold-war lunacies, *The Physicists* presciently invokes a peril lurking beyond the rivalry of the superpowers: the threat, so widely feared today, of stateless networks obtaining catastrophic weapons"(Benjamin, 2007).

In his twenty-one points to the physicists, Durrenmatt states that; " Human beings proceeding by plan wish to reach a specific goal. They are most severely hit by accident when through it they reach the opposite of their goal: the very thing they feared, they sought to avoid ,i.e.Odipus" (TP.95).

Mobius' idealist dream about safe scientific progress parted from uncertain politics becomes the nightmare he tried to escape, specifically the misuse of his science by nations to have political power. Then ,he falls in the worst when his science falls in the hand of insane. Durrenmatt depicts Mobius as a hopeless figure who resembles the ancient tragic hero Oedipus , as both have fallen in the iron grip of fate.(Matlack,2012) Ross Benjamin reflects

Durrenmatt's view of the world of the mid-twentieth century when he writes to express the "timeless experience that the century made devastatingly palpable: the experience of human ideals shipwrecked on the shoals of human reality " (Benjamin, 2007).

At the end of the play, the three physicists are imprisoned in the madhouse, and all of them realize that humanity is doomed. Each one of them decides to accept his accountability on his actions; Einstein suggests that the atomic bomb has been developed depending on his theory of 'Special Relativity', and despite he cherishes humanity, he recommends building the atomic bomb. Mobius describes himself as 'poor Solomon' he blames his wisdom namely knowledge that erodes his fear of God and ultimately destroys his kingdom.

Mobius: I am Solomon. Once I was immeasurably rich, wise and God fearing. The mighty trembled at my word. I was a prince of peace, a prince of justice. But my wisdom destroyed my wealth.(TP,93)

The Monologues by the three physicists end and leave the audience puzzled about what to believe .

Despite more than a half age has passed on writing the play, its theme of social responsibility of the scientists is still reflecting the fear that surrounded nuclear weapons that so-called "rouge" countries have and also the recent paranoia about biotechnological field especially about playing with the genetic material of the viruses and creating new virus that could destroyed the world. Recently people lose their trust in the scientists and begin to suspect them especially when debating about coved-19.

Conclusion:

The physicist is a play about the ethical dilemmas of science in twentieth century. Durrenmatt shows the issue of uncontrolled scientific advancement since the play was written as a response to the invention of the atomic bomb. He portrays the world in which science is out of control, the plight that makes him conclude at the end of the play that the world will fall into the hands of insane.

The play arouses questions about insanity, the moral and political obligations that are connected with scientific inventions. Durrenmatt questions the role of the scientists in the consequences of their discoveries; he makes the audience think of the scientists whose discoveries helped to create destructive weapons and the possibility of being held accountable on the death incurred because of the atomic and hydrogen bombs.

The play conveys deep messages to the world, especially to the scientists who devoted themselves, not to pure research, but to other purposes. Durrenmatt highlights that the scientists' contributions should spring from their moral commitments towards science and humanity. He argues that the gift and power of intellect that the scientists have, exceed any other power in the world and that necessities not to submit or yield to the will of authorities. "we are providing humanity with colossal sources of power, that gives us the right to impose conditions."(TP,76). Durrenmatt gives the image of the helpless scientists who are unable to protect their discoveries besides giving them some options like locking up themselves in the asylum.

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