

## 'Earth Matters' in Solo Performances: An Ecocritical Study of Stephen Emmott's *Ten Billion* and Chris Rapely's and Duncan MacMillan's *2071*

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### Abstract

The aim of this study is to examine the potential of theatrical practices, namely solo performances, as an effective tool that could positively address climate change crisis and reform human behavior in relation to the environment. Environment-related scientific data showcase that there is an impending danger that will engulf the whole world if radical proactive action is not taken as regards to humans' action towards the environment which results in pollution, climatic change, and the appalling increase in the rate of carbon dioxide inhaled by man that causes several carcinogenic diseases. This study will analyze two solo performances that are co-written by a scientist and a playwright, namely Stephen Emmott's *Ten Billion* (2013) and Chris Rapely's and Duncan MacMillan's *2071* (2014). The researcher will employ the theories of ecocriticism at large and climate change criticism in particular to provide a theoretical framework for the two plays under study and answer the following questions: Are environmental issues and social change intertwined? Can a theatrical work of art play an effective role in solving environment-related issues, such as climate change and global warming?

**Keywords:** Ecocriticism, Ecology, Deep ecology, Shallow ecology, Over population

### 1. Introduction

Literature has long been the arena for raising important issues, provoking thoughts, arousing emotions, and solving problems. One of the most universal and apprehensive problems that have become a subject matter for writers is the abuse of environment in several forms by man. Climate change and over

population are reckoned salient manifestations of human’s maltreatment of nature. Thus, there are many forms of art that basically tackle this matter. Cli-fi novels and eco-theatrical performances have been broaching this topic for decades. However, solo performance is an emerging form of art that has handled the same issue in an unconventional compelling manner. Therefore, two solo performances, namely, Stephen Emmott’s *Ten Billion* (2013) and Chris Rapely’s and Duncan MacMillan’s *2071* (2014) are selected for this study. The first play tackles the predicament of over population, whereas the latter addresses the universal issue of climate change.

In this paper, the researcher will examine the plays from a generic and a thematic standpoint. The paper starts with an overview of the theory of ecocriticism and climate change criticism which are the theoretical framework employed to analyze the plays under study. A comparative eco-critical examination of the plays is conducted to point out the elements of convergence and divergence between the two works of art. Both Emmott and Rapely aim at raising human’s eco-awareness. However, Emmott draws a bleak picture of the world, declares his distrust of mankind, and predicts the inevitable outbreak of a pandemic. Contrastingly, Rapely holds a strong belief in the strong affinitive relationship between man and nature and thus sketches an optimistic future of humanity.

## **2. Climate Change Literature: Climate Change Fiction (Cli- Fi)**

‘Earth matters’ is a slogan raised by environmentalist to stop all forms of abuse against nature. Climate change is an alarming issue considered by scientists, environmentalists, journalists, and writers around the globe. It has become an urging issue which led journalist Dan Bloom to coin the term cli-fi or climate change fiction in 2007 (Holmes). In response to the adamant environmental theorists Bill McKibben and Robert Macfarlane who lamented the dearth of literary narratives that tackle climate change as their subject matter, Bloom purported that the latter topic is broached in cli-fi novels and cli-fi films (Svoboda). McKibben in his article, "What the warming world needs now is art, sweet art" strongly believes in the positive impact of literature and the role it should play to alter the negative practices of human beings in the context of climate change crisis. He wonders: "But oddly, though we know about it, we don’t *know* about it. It hasn’t registered in our gut; it isn’t part of our culture. Where are the books? The poems? The plays? ... Compare it to, say, the horror of AIDS in the last two decades, which has produced a staggering outpouring of art that, in turn, has had real political effect" (2005). Speaking in the same vein,

Wendy Arons points out that "humanity's relationship to the environment is an issue of urgent concern, and one that can and should be addressed by anyone engaged in critical and intellectual pursuits, including theatre artists and scholars" (93). An urging demand to produce works of art to tackle climate change issue and global warming has been voiced out since the beginning of the twenty-first century.

Interviewed by David Holmes, Bloom expounds that he is concerned about the future of humanity and the impending hazards of carbon dioxide emissions. As to the temporal structure of the narrative, Bloom explains that it could be tackled in the past, present or future. He adds that climate fictions in novels and films could be tackled from a utopic or dystopic vantage point. The writer could either help people visualize a gloomy world as a repercussion of climate change and global warming or could sketch an optimistic picture of a world that has managed to avert the calamity and save itself. In both cases, he strongly holds the belief that "cli-fi is a fiction genre that might be helpful in waking people up and serving as an alarm bell" (Holmes). Bloom warns against the detrimental consequences of climate change and global warming to the environment. Cli-fi is not perceived as a literary genre per se as it does not have a determined plot frame and certain stylistic rules (Goodbody & Johns-Putra). However, "borrowing from and often embracing elements of different existing genres, it provides a convenient term for an already significant body of narrative work broadly defined by its thematic focus on climate change and the political, social, psychological and ethical issues associated with it" (Goodbody & Johns-Putra). It also sheds light on the relationship between man and nature (Trexler & Johns-Putra 196), and how man's actions have led to the global destruction of the environment.

### **3. Ecocriticism: Background and Development**

The popularity of climate change literature has resulted in an increasing interest in climate change literary studies known as Ecocriticism. Reckoned as the pioneer of Ecocriticism, Kenneth Burke prophetically declared in his 1937 book *Attitudes Toward History* that ecology "teaches us that the total economy of the planet cannot be guided by an efficient rationale of exploitation alone, but that the exploiting part must eventually suffer if it too greatly disturbs the balance of the whole" (150). In spite of the fact that William Rueckert coined the term Ecocriticism in 1978 in his seminal article, "Literature and Ecology: An Experiment in Ecocriticism," Burke introduced Ecocriticism long before it has been recognized and tackled by ecocritics, such as Lawrence Buell, Cheryll Glotfelty, Greg Garrard, and Harold Fromm. Burke acquiesces the "legacy of

anthropocentrism” (Coupe 5) and holds the belief that human beings should reconsider their motives if they are incongruous with nature. He proactively cares about how human beings act towards nature and how they affect it. He has challenged preconceived assumptions and rightfully deserves to be pinned down as the precursor of Ecocriticism.

There has been no consensus as regards to the definition of ecocriticism as Nirmal Selvamony remarks that “ecocritics are not agreed on what constitutes the basic principle in ecocriticism, whether it is *bios*, or nature or environment or place or earth or land. Since there is no consensus, there is no common definition” (xix). However, it is substantially related to the environment as Ursula Heise points out that “*ecocriticism* has imposed itself as convenient shorthand for what some critics prefer to call environmental criticism, [or] *literary-environmental studies*, [or] *literary ecology*, [or] *literary environmentalism*, [or] *green cultural studies*” (506). However, the most common definition of ecocriticism is by Cheryl Glotfelty and Harold Fromm in their introduction to the *Ecocriticism Reader* in which they define the term as “the study of the relationship between literature and the physical environment”(xviii).

### 3.1. Ecology: Shallow and Deep

Ecology is a subset of ecocriticism. It comprises shallow ecology and deep ecology. Shallow ecology is fundamentally anthropocentric and holds the premise that man is at the center of the universe and has the right to benefit out of nature. Nature should be at man's entire disposal which is equivalent to an instrumental value; man has the right to all natural resources to ensure sustainability. Climate change is perceived by shallow ecologists as bad because it has a negative impact on man. Unlike shallow ecology, deep ecology, a term coined by Norwegian Philosopher Arne Naess in an article entitled, “The Shallow and the Deep, Long-Range Ecology Movement: A Summary” which he wrote in 1973, is antithetical to anthropocentrism. “Man’s tragic flaw is his anthropocentric as opposed to biocentric vision, and his compulsion to conquer, harmonise, domesticate, violate and exploit every natural thing” (Rueckert qtd. in Zeng 211). It calls for the preservation of nature which should not be usurped by man. Deep ecologists believe that nature has an intrinsic value and should be preserved. For example, climate change is regarded from a negative vantage point because it will not constitute a threat to human beings only but also other living beings. Similarly, Frederick remarks “The modern ecological consciousness has a feeling that the balance between human and the natural world must be

maintained. A perfect ecology is one in which plants, animals, birds and human beings live in such harmony that none dominates or destroys the other" (147). Bridging the gap between man and nature is the ecologists' fundamental concern; to shun away the humanistic notion that stipulates the superiority of man and to ensure the importance of saving nature. Ecologists repudiate the anthropocentric view of man and promote a biocentric philosophy of nature which call for protecting non humans and nature at large.

### **3.2. Climate Change Criticism**

Another development of ecocriticism is the climate change criticism or critical climate change which was introduced by Yates Mckee (Johns-Putra 275). Climate change criticism which stems out of ecocriticism mainly perceives climate change from two perspectives. First, it analyzes it as a 'cultural phenomenon' employing traditional literary theory viewpoint which entails Derrida's deconstruction, Foucault's 'analyses of power and discourse', or Latour's 'actor-network-theory' as expounded by Johns-Putra (275). Second, it probes climate change through the study of everyday life and human behavior (Johns-Putra 278). Accordingly, climate change theorists have had to go back to the notion of Anthropocene. John-Putra asserts the importance of the Anthropocene in climate change criticism "to signify not just how humans have become geological agents but how human destruction of both civilization and environment has engendered an existentialist crisis and radically altered human ontology and epistemology, that is, our ways of being and knowing" (276). Climate change criticism is an effective branch of ecocriticism which delves deep into the Anthropocene and works towards ecological change.

### **3.3. Man and Nature Interconnectedness**

Accordingly, the relationship between man and nature is probed by many environmentalists. Eugene Linden, a prominent environmentalist and adamant environmental theorists such as Bill McKibben, James P. Sterba, and Murray Bookchin vehemently hold the belief that it is man's action and behavior that causes the ecological predicaments. It was not until the 22<sup>nd</sup> of April in 1970 that people went out on demonstrations to voice out their detest against man's abuse of the environment which has become known as Earth Day. Linden eloquently described the pain of earth and called for action in an article entitled "Critical Condition" in the Time Magazine: "For more than 40 years, the earth has been sending out distress signals. At first they were subtle, like the thin shells of bald-eagle eggs that cracked because they were laced with DDT. Then the signs were unmistakable, like the pall of smoke over the Amazon rain forest, where farmers

and ranchers set fires to clear land” (34). He declares that “as the new millennium drew near it was obvious that the earth’s pain had become humanity’s pain” (34). Therefore, humanity and nature are connected as environmental theorists and activists believe.

The relationship between humanity and nature forwarded by Mckibben is in line with biologist E.O. Wilson’s tenet of biophilia which "proposes that humans have inherited a genetic tendency to respond to the natural environment in certain ways, particularly with certain emotional responses” (Hinlein 53-54). Likewise, Clayton’s theory of “natural identity,” promotes the idea that our connection to the natural can be capitalized upon to alter behavior that results in ecological betterment." (Hinlein 54). Through these emotional responses that Rosenblatt refers to as “Green impulses” (Hinlein 32), both theatrical and environmental practitioners can change human behavior and empower the environment. Rosenblatt goes further and asserts "that no matter how much we get and spend, and no matter how fast we develop and implement technology, humans will possess an innate attachment to all things Green (Qtd. in Hinlein 47). Thus, there is a strong affinity between man and nature.

#### **4. Ecology and Performance**

Having stated that humanity and nature are entangled and that the ecological crisis is the direct result of social problems, it is inevitable to look for solutions. Accordingly, theater should play an indispensable role to address the global ecological concerns. Arons and May state the reasons behind the dearth representation of ecological problems on stage: “‘Performance’ and ‘ecology’ - do not easily or readily share space together, either materially or ontologically. This paradox explains in part why, at the beginning of the second decade of the twenty-first century, ecology and environment are not only underrepresented and underthematized on the Western stage, but also undertheorized in theater and performance scholarship” (1-2) They add that “... Representing and thematizing the more-than-human world in performance with the tools we generally bring to bear on the task seems to require, by default, reinscribing that binary divide between culture and nature, given that performance itself is always already a cultural interpretation of and overlay onto the ‘natural’ world” (1-2). Hence, new tools are needed on stage to bridge the gap between culture and nature.

##### **4.1. Eco theatre**

Irreversibly, Slagle states the potential and strong impact of Eco theatre which "has altered our perceptions, our assumptions, and our culture. We understand that we live in a finite and mortal ecosystem, knowledge of human

impact on the environment and global climate change have become hallmarks of even a marginally informed and aware person, and Eco theater is becoming a more powerful force in our theatrical practice" (2013). It is a strong catalyst that purports to bring about socio-environmental change. Moreover, Heinlein employs the term 'Green Theatre' instead of Eco Theatre and asserts that it "promotes a proto-environmental agenda in re-directing Western mores and socio-ecological behavior" (26). Eco Theatre is more related to environmental theatre which entails everything related to the environment, unlike the Green Theatre which primarily focuses and addresses the ecological predicament.

Not only are the impending hazards of climate change depicted through cli-fi novels and cli-fi films, but also through Eco theatre where dramatists place climate change and global warming and other ecological concerns on stage. Dramatising the ecological issue has taken different forms over centuries. Ecological concerns in theatrical works of art could be traced back to the 16<sup>th</sup> century by Shakespeare who is thought to be "a chronicler of climate-change disaster" (Gardner). The second half of the 19<sup>th</sup> century realistic drama paved the way for green theatre or Eco theatre. Examples of early Eco theatre plays are Henrik Ibsen's *An Enemy of the People* (1882) in which he revealed the deterioration of moral value in the context of man-nature relationship (Heinlein 75); in addition to "The Federal Theater Project's Living Newspaper plays *Power and Triple A-Plowed Under*, Robert Schenkkan's *The Kentucky Cycle*, August Wilson's *Two Trains Running*, Edward Albee's *The Goat, or who is Sylvia?*, David Edgar's *Continental Divide*, and even Miller's *Death of a Salesman*" (Slagle).

These plays did not primarily showcase the ecological issues of the day; however, they tackled them from a socio-economic lens manifested through human relationships. "A feature of this early wave is its discussion of ecological issues as more inclusive of other forms of oppression; racism, repression of the lower class, immigration policies, imperialism, and state aggression" (Slagle). Those writers, similar to Chekhov, held the belief that "the decay of social values strongly correlated to the decay of environmental values. This fact is illuminated in the play by the simultaneous destruction of social and ecological entities" (Heinlein 75). Hundreds of ecocritical studies of literary texts have been conducted. Shakespeare has been analyzed from an ecocritical perspectives, in addition to romantic poets, Victorian writers, and other Modern and Postmodern writers. Nature has always been of pivotal concern in literature long before the rise of climate change and global warming issues. Nature at large and climate

change in particular have been subject matters that are extensively tackled in literature.

#### **4.2. Solo Performance and Environmental Issues**

There have been many theatrical representations of universal environmental issues; however, solo performance is a genre that nascently delves deep into this terrain. Also known as one-man show or one-woman show, a solo performance presents a single character addressing the audience (Bonney 450). Monologue plays could be traced back to the end of the nineteenth century through August Strindberg’s *The Stronger* (1888) and Eugene O’Neill’s *Before Breakfast* (1916) (Wallace 3). The development of the genre could be attributed to Samuel Beckett as Clare Wallace, in her article, “Monologue Theatre, Solo Performance and Self as Spectacle” expounds that “it is not until Samuel Beckett begins to explore the form in the late 1950s that its experimental potential is seriously developed” (3). Monologue developed into two forms: monologue drama and solo performance. In both forms, one person addresses the audience directly or speaks to a character who keeps silent and does not respond (Wallace 4). It has an unconventional setting where audience find nothing on the stage so as to grab their attention to the speaker only and the subject matter tackled.

Not maintaining all elements of a conventional theatre, monologue theatre has been harshly criticized as Wallace puts it: “Monologue theatre nevertheless remains contentious, soliciting questions about the very nature of theatre itself, about the nature of performance and audience response, truth and illusion, narrative and experience (2). Michael Billington, an advocate of solo performance, rejects critics who do not regard solo performance as a theatre and pin it down as a mere lecture remarking that “Theatre is whatever we want to be and gains immeasurably from engaging with momentous political, social or scientific issues” (2012). Acclaiming the main feature of solo performance, Jo Bonney remarks: “The world of solo performance is one in which the spoken word is wedded to the energy and action of a performer who is intimately connected with his or her audience” (425). She thus pinpoints the speaker’s verbal power which is the fundamental characteristic of solo performance.

#### **5. *Ten Billion* (2013) and *2071* (2014)**

An illustration of these solo performances are *Ten Billion* (2013) and *2071* (2014). The former is written by the scientist-cum-professor Stephen Emmott. A renowned scientist at Microsoft and a visiting professor of computational science and biological computation at Oxford University and College London University respectively. One year later, *Ten Billion* was followed by another solo

performance entitled *2071* which was written by Chris Rapely, a climate science professor at the University College London in collaboration with English playwright Duncan MacMillan which was then published in a book entitled *2071: The World We’ll Leave Our Children* in 2015. *Ten Billion* and *2071* are two solo plays written by scientists who are assisted by professional playwrights to produce riveting theatre nights that take the audience by storm as regards to contemporary ecological concerns.

The setting of *Ten Billion* is at Emmott’s office at the University of Cambridge where he stands amidst his disordered office to deliver his one-hour talk about the repercussion of over population. Air filled with anxiety manifested through a standing professor and a disorganized cluttered office create a tensed atmosphere that put the audience on edge from the very beginning of the play. Emmott declares the failure of humans as he commences the play:

This is a book about us.

It’s a book about you, your children, your parents, your friends. It’s about every one of us. It’s about our failure:

**Failure** as individuals, the failure of business, and the failure of our politicians.

It’s about the **unprecedented planetary emergence** we’ve created.

It’s about the future of us. (2013)

On the contrary, in *2071*, the play opens on a serene note as the audience first sees Rapely, a placid man sitting on a chair in a quiet place where he calmly explains and relates climate change scientific facts for 75 minutes. He thus keeps the audience bolted to their seats. The play addresses a number of questions: How would the world look like in 2071? What would be the consequences of climate change crisis? The reason behind choosing the year 2071 in particular a title for the play by Rapely is the year his eldest granddaughter will be as old as he is at present; she will be 67 years old. Rapely, a climate science professor at University College London, contemplated and visualized the future of coming generations after five decades. Astonishingly enough, in both *Ten Billion* and *2071*, the writers turn from being scientists to actors in the Royal Court Theatre in London.

Both plays address all ecological issues at large and in particular over population and climate change respectively. Emmott, in *Ten Billion*, proclaims that man has a negative impact on Earth “Indeed, our cleverness, our inventiveness, and our activities are now the drivers of every global problem we face. And every one of these problems is accelerating as we continue to grow

toward a population of ten billion” (2013). He restates that over population per se is an “unprecedented planetary emergence” (2013). He then introduces his biography saying that he is a scientist who is in charge of a lab in Cambridge University and works with a group of promising young scientists who conduct research on ecosystem and how it is affected by humans. He perceives science as a tool to understand the consequences of the change caused by humans to Earth: “Science is ultimately about *understanding*. And this is what we try to do: to understand the earth's climate, and the behavior of the earth's terrestrial and marine ecosystems—from its microbial communities to its forests—and to predict how these vital planetary systems will respond to change” (2013). Being a scientist, he states scientific data pertinent to the overgrowth of population over ages:

We humans emerged as a species about 200,000 years ago.  
In geological time, that is really incredibly recent.  
Just over 10,000 years ago, there were one million of us.  
By 1800, just over two hundred years ago, there were one billion of us. By 1960, fifty years ago, there were three billion of us.  
There are now over seven billion of us.  
By **2050**, your children, or your children's children, will be living on a planet with at least nine billion other people.  
Sometime toward the end of this century, there will be at least **ten billion** of us. Possibly more. (2013)

Similarly, Rapely in *2071* introduces himself to the audience as a “climate scientist” who “develops rocket and satellite instruments” and is in charge of “the International Geosphere-Biosphere Programme,” “British Antarctic Survey,” “President of the international scientific body that coordinates research in the Antarctic,” and the “Director of the Science Museum” (2014). Having employed the ethos mode of persuasion by offering credible evidence about himself, Rapely moves on to tackle the issue of climate change which he pins down as an “emotive issue,” “complex” and “controversial” by enlisting factual scientific data. He commences the play by announcing that he is going “... to talk about the future.” He asserts that there are multifarious levels of interrelated elements that define and shape the climate change issue. Nevertheless, from a deep ecology perspective, Naess refuses “the man-in-environment image in favor of the relational, total-field image” (95). Deep ecology augments the relation between

man and nature. Similarly, Rapely calls people to join efforts to solve the ecological issue: "... we all need to be part of that process" (2014). Moreover, human beings around the world are affiliated to nature and accordingly "In December this year, 195 nations will meet in Paris to agree on a course of action to respond to climate change" (Rapely 2014). Therefore, Rapely advocates the deep ecologists' biocentric view in which man and nature are inseparable.

In addition to stating scientific-based facts, Emmott relies on infographics to convince the audience that humans are growing at a rapid rate. Another unconventional prop if one might call it so, Emmott has a PowerPoint projector to display his graphs and illustrative images to help him draw a comprehensive picture. He expounds that over population was the result of a number of revolutions: "We got to where we are now through a number of civilization- and society-shaping "events"; most notably, the agricultural revolution, the scientific revolution, and-in the West-the public-health revolution" (2013). He explains in detail the negative impact each revolution has had on the environment. "It also sets in motion an unprecedented decline of species and the start of the degradation of entire ecosystems" (2013). Through the presentation of scientific data that has led to climate change and global warming, Emmott resonates deep ecology guru Naess' criticism of the Western civilization pragmatic relation to nature. Keller adds a further insight into the "...European and North American anthropocentrism-its reasons for conserving wilderness and preserving biodiversity are invariably tied to human welfare, and it prizes nonhuman nature mainly for its use-value" (206). Emmott endorses deep ecologists' more than a simple reform of ecological ideology and opts for "a substantial reorientation of our whole civilization" (Keller 206).

Nature and humans' inseparable relationship is what Emmott endeavors to assert through his display of scientific data. Emmott writes: "As our numbers continue to grow, we continue to increase our need for more water, far more food, far more land, far more transportation, and far more energy. As a result, we are now accelerating the rate at which we're changing our climate" (2013). He elaborates that "In fact, our activities are not only completely interconnected with, but are now also interacting with, the complex system we live on: Earth. It is important to understand how all this is connected" (2013). Man has to be in a state of what Naess calls 'identification' (188, 1973) with nature. It is a reciprocal relationship; man's action and behavior are the reason behind all ecological problems which is in line with deep ecology which "identifies the dualistic separation of humans from nature ... as the origin of environmental

crisis, and demands a return to a monistic, primal identification of humans and ecosphere" (Garrard 21). "This is where we are now" is a sentence that Emmott reiterates throughout the play as a shocking reminder to the audience after enlisting the facts that has resulted in the varied ecological calamities. From 'where we are now' to 'where we are heading' with reference to 'an interconnected' man-nature relationship is Emmott's manner of sketching a full ecological picture.

We need to take a closer look at what's happening right now—today—with this highly interconnected system that we rely upon, and which we are rapidly changing. Because doing so is critical to understanding where we are heading.  
(Emmott 2013)

Likewise, Rapely displays the interconnected relationship of humans and nature. He elucidates that climate change and global warming are the direct outcome of man's actions. Ecocritics basically study the interconnected link between the environment and the socio-political implications of man's actions. Rachel Carson, a writer and marine biologist, points out the reciprocal relationship between man and nature as follows: "As man proceeds toward his announced goal of the conquest of nature, he has written a depressing record of destruction, directed not only against the earth he inhabits but the life that shares it with him. The history of the recent centuries has its black environmental passages..." (Sale 3) Humans' sustainability is dependent on maintaining ecological balance.

Exploring Earth was man's initial objective which has turned into abuse as Rapely relates all scientific facts since 1957 when " Commonwealth Trans Antarctic Expedition" (2014) navigated the South Pole and 67 countries joined efforts to study the Earth through the "International Geophysical Year which has resulted in many major advances ... in oceanography, meteorology, magnetism and a host of other research fields" (2014). His interest in nature has started ever since he was 10 years when his mother gave him an Atlas (2014) and this interest developed as he grew older and became a Physicist Oxford University graduate and trainee. Studying the universe has become Rapely's passion as he remarks: "In 1971, I began my research career designing and building my own rocket and satellite instruments to study the cosmos" (2014). He then joined NASA to participate in "designing and operating a satellite mission to study solar flares - explosive energy releases that occur in the Sun's Atmosphere" (2014) which reveals Rapely's strong affinity to nature and utter rejection of anthropocentrism. Although "deep ecology identifies the anthropocentric dualism humanity/nature

as the ultimate source of anti-ecological beliefs and practices..." (Garrad 21), Rapely does not directly condemn man and hold him accountable for climate change. In his capacity as a scientist, Rapely deftly explains all scientific facts that have led to the ecological quandaries. He remarks: "Apart from a small contribution from human use of aquifers, the rest of the sea level rise is due to thermal expansion" (2014). He lectures the audience in a scientific manner that renders them numbed. Rapely propounds:

Water vapour, methane and carbon dioxide obstruct the loss of heat from the surface as it passes upwards.

This effect, referred to as the "Greenhouse Effect", causes the Earth's surface to have an average temperature of 15 degrees. Without it, the surface would be 15 degrees below freezing.

Life as we know it would be impossible. (2014)

Rapely, similar to deep ecologists, manages to shock the audience, bring the ecosystem to the fore, and highlight "the shift from a human-centered to a nature-centered system of values" (Garrad 21). Away from being didactic, he deftly raises the eco-awareness of man by stating the facts that would lead up to pernicious consequences. A riveting unconventional technique is employed by Rapely who renders the audience startled through his illustration of one scientific fact after the other.

Last year, the carbon dioxide concentration of the Atmosphere passed 400 parts per million.

Take a deep breath.

We're the first human beings to breathe air with that level of CO<sub>2</sub>.

It is unprecedented in the recent record. (2014)

Similar to Rapely, Emmott shocks the audience with scientific facts; however, he foresees a bleak future as he points out: "All of the science points to the inescapable fact that we are in trouble. Serious trouble" (2013). In addition, he remarks: "But one thing that is predicable is that things are going to get worse" (2013). Moreover, he predicts the outbreak of a pandemic as one of the consequences of over population and all interrelated ecological issues.

There was a global pandemic just ninety-five years ago- the Spanish flu pandemic, which is now estimated to have killed up to 100 million people. And that's before one of our more questionable innovations-budget

airlines-were invented.

The combination of millions of people traveling around the world every day, plus millions more people living in extremely close proximity to pigs and poultry-often in the same room, making a **new virus** jumping the species barrier more likely-means we are increasing, significantly, the probability of a new global pandemic.

So no wonder then that epidemiologists increasingly agree that a new global pandemic is now a matter of "**when**" not "if." (2013)

Astonishingly enough, Emmott speaks about the inevitable outbreak of a pandemic five years in advance. COVID-19 has been the realization of a scientist's expectation. No one could have imagined that this deadly pandemic has been the outcome of over population as explained by Emmott. Not so many analysts relate the pandemic to the ecological issue as scientifically expounded and foreshadow by Emmott.

Irreversibly, Rapely does not bluntly and aggressively accuse humans and hold them responsible for climate change and global warming. Nevertheless, he scantily mentions man's direct abuse of nature throughout the play; the word 'human' appears very few times throughout the whole play- three times, for example, he proffers: "Human impact on the planetary system has been so profound that many feel we have irreversibly brought the climatic stability of the Holocene to an end and entered a new epoch: The 'Anthropocene' " (2014). Human's exploitation of nature has commenced with the advent of the Industrial Revolution in the 19<sup>th</sup> century and has resulted in the anthropocene age which is defined by Timothy Clark in his seminal book *Ecocriticism on the Edge* as "term coined by atmospheric scientists" (1). He remarks that "Human activities have become so pervasive and profound that they rival the great forces of nature and are pushing the Earth as a whole into planetary *terra incognita*" (1). Rapely deftly reveals the negative impact of human's actions on nature through scientific data not direct reprimand.

After enlisting all climate change relevant data, Rapely starts to indirectly reveal to the audience how indicted man is through scientific evidence mentioned in the Intergovernmental Panel on Climate Change (IPCC) which was set up by the United Nations Environment Program and the World Meteorological Organization in 1988 and was responsible for summarizing the scientific data that tackles the decisions of the United Nations Framework Convention on Climate

Change (2014). The report states that "there is evidence that ALL the warming that has occurred since 1950 is due to human actions - due to us" (Rapely 2014). Rapely addresses the climate change problem through the exact message delivered by US Secretary of State, John Kerry, who comments on the IPCC report: " "Boil down the IPCC report and here’s what you find: Climate change is real, it’s happening now, human beings are the cause of the transformation, and early action by human beings can save the world from its worst impacts" (2014). An obtrusive call for human action to address the climate change crisis uttered by John Kerry. Rapely prefers to ecologically incriminate humans through facts voiced out by reliable figures and statistics. Conversely, Emmott sends bitter censure to humans from the beginning until the end of the play for one continuous hour.

*Ten Billion* ends on a very pessimistic note as Emmott’s final words are “We urgently need to do- and I mean actually do-something radical to avert a global catastrophe. But I don’t think we will” (2013). Emmott does not think that humans can ‘do something radical’ to address ‘the unprecedented planetary emergency’. Disappointingly, Emmott sends a dismal message to his audience by his end of play discouraging and frustrating words. Unlike Emmott and other theatrical practitioners who tackle the global ecological concerns by delineating a bleak dystopic end of humanity to ring the alarm bell, Rapely sketches an optimistic image of the future where countries hold hands "In the lead up to Paris 2015, and prior to the recent talks in Lima, President Obama and Chinese President Xi Jinping announced joint measures to fight climate change " (2014) and move towards reformational action to mitigate climate change and global warming.

There is **justified cynicism** surrounding the Paris meeting.

These nations have been meeting for decades and overall global emissions haven’t yet decreased.

However, there are **hopeful signs** from world leaders and governments and a growing pressure on them from an increasingly informed populace.

Last year, a million people around the world marched in various capital cities to demonstrate their concern. (2014)

'Hopeful signs' Rapely highlights in spite of the 'justified cynicism.' He enumerates the positive actions taken by countries: “The **US** aims to reduce its carbon emissions 26-28% below 2005 levels by **2025** – nearly doubling its

previous commitments” (2014). China also “has committed to cutting the proportion of energy it generates from coal and has set up pilot carbon markets and low carbon zones” (Rapely 2014). Moreover, India “has committed to expand solar energy to provide electricity to 300 million of his country’s citizens, who have no access to power at present” (Rapely 2014). Adding to the list of initiatives, Rapely states that “**The European Union** has agreed a package to achieve a 40% reduction in its domestic emissions by **2030**. And **Germany** has just recently committed to curbing its emissions by 40% by the end of 2020, with the longer-term goal of supplying 80% of its power from renewable sources by **2050**” (2014). He sends a positive message to the audience, namely, there is hope for a better future.

Emmott does the opposite as he displays his despair through the enlisting of all global initiatives that failed at achieving their aims, stating that “the UN Framework Convention on Climate Change, whose job it has been for twenty years to ensure the stabilization of greenhouse gases in the earth's atmosphere: **failed**” (2013). He also adds another failing convention: “the UN Convention to Combat Desertification, whose job it's been for twenty years to stop land degrading and becoming desert: **failed**” (2013). In addition, “the Convention on Biological Diversity, whose job it's been for twenty years to reduce the rate of biodiversity loss: **failed**” (Emmott 2013). To augment the feeling of despair and distrust, Emmott, the ‘rational pessimist’ and ‘skeptical’ as he describes himself, declares that humans cannot achieve the solutions to the ecological problem as suggested by him: “The first is technologizing our way out of it. The second is radical behavior change” (2013). He offers two solutions to the ecological predicament; however, he provokes the audience by declaring their failure in advance.

Conversely, Rapely ends his play on a positive note pinpointing what humans have done as regards to the global ecological crisis.

Many individuals have taken measures to reduce their own climate-related impacts – by making changes in their personal, professional and public lives - installing solar panels, increasing the energy efficiency of their homes, vehicles and appliances, by using public transport and avoiding unnecessary travel, by changing diet and by choosing to forego activities that generate emissions.

They have encouraged changes to be made in their workplaces and written to their MPs.

They have sought to educate themselves about the issue and to talk about it with their friends, families and communities. (2014)

As Rapely calls himself an “objective and dispassionate scientist” (2014), he explains the reasons behind climate change and global warming in a scientific elaborate manner, states statistical data, showcases all incremental steps that will amount to human's hazardous future. He does not distrust humans and hold them responsible for climate change; however, he displays genuine trust in humans: "It's a daunting challenge, but my experience at the Science Museum, with its legacy of technical innovation on public display and held in its reserve collection and archives, convinces me that on a finite planet human ingenuity is unbounded" (2014). He is not a scientist per se, but a humanist as well who calls for a better world for man and nature to live in harmony. Speaking in the same vein, William Howarth, in “Ego or Ecocriticism?” remarks: “[while] the scientist’s task is to predict, the humanist’s task is to remember. To remember with truth and compassion is to know the past and take steps toward a viable future” (8). Rapely raises the ecological awareness of human beings and provides the concrete evidence for the cause of all ecosystem perils which is due to man’s actions.

Although Rapely is a scientist, he does not find the answer to the ecological problem in science which cannot answer important questions. "Science can inform, but it cannot arbitrate, it cannot decide. But it can't answer moral questions, value questions" (2014). He ends the play with a list of questions for the audience to contemplate and answer. “Do we care about the world’s poor? Do we care about future generations? Do we see the environment as part of the economy, or the economy as part of the environment? ... what sort of world we want to live in. What kind of future do we want to create?” (2014) Rapely, through his play, has provoked man to reconsider his relationship to nature which is asserted by Theresa May, in her article “Greening the Theatre” in which she remarks that “Theatre can help us examine our own ecological identities: where we draw our boundaries and how permeable or fixed are our notions of self, culture, and humanness? When playwrights and eco-critical scholars engage in a deep ecological inquiry of the theatre they can together forge a green dramaturgy, an ecological theatre, which will not only tap the power of performance to shape culture but also revive and transform the art of theatre” (25) In addition, May remarks that Green dramaturgy “asks us to reconstitute the world, to re-conceive our notions of community in such a way that the very boundaries between nature and culture, self and other, begin to dissolve” (25). In his search for environmental

solutions, Rapely has been continuously highlighting the importance of nurturing ecological awareness and developing a strong affinity between man and nature.

## 6. Conclusion

*Ten Billion* and *2071* are solo performances written and performed by scientists-cum-playwrights who have managed to tackle an ecological issue of paramount importance in a riveting manner that tolls a bell of despair and/or hope to save humanity. Both Emmott and Rapely scientifically address all ecological quandaries with special emphasis on over population and climate change respectively from the ecocritical vantage point. However, Emmott sketches a dystopic ecological reality voicing out man’s failure at bringing about change as he explains the present and foretells the future. He attributes the ecological crisis to western civilization manifested through the advent of Industrial Revolution. From a deep ecological perspective, he rejects man’s anthropocentric view of nature which is the direct outcome of industrial progress. Appallingly enough, he has predicted the outbreak of a pandemic; a virus which is the direct repercussion of over population as he has expounded. He does not call the audience into action; however, he has held up a mirror that has reflected their bleak present and appalling future. Conversely, Rapely scientifically expounds that calamitous effects of man’s action without extending bitter reprimand to humans. Unlike shallow ecologists, Rapely calls for ontological and epistemological reform and endorses a biocentric view in which man and nature have an interconnected relationship. He ends the plays on an optimistic note yet posing a number of rhetorical questions that function as eye- opener to the audience. Both plays have managed to approach the ecological issue in an unprecedented undidactic manner. Eco-awareness has been definitely provoked and raised through an ecocritical approach in a gloomy and sanguine manner respectively. Man-nature interconnected relationship has been saliently showcased and the reciprocal relation between man’s actions and environmental issues have been scientifically proven. Climate change and over population along with other ecological concerns have been tackled through solo performances; nevertheless, they deserve further scrutiny in literary studies as these ecological problems constitute a horrendous threat to humanity. Writers, scientists, ecocritics, journalists, and people from all walks of life must sit together on the same table to address the future of humanity.

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أهمية الأرض في المسرحيات ذات العرض المنفرد: دراسة نقدية بيئية لمسرحية "عشرة بليون نسمة" للكاتب ستيفن ايموت ومسرحية "٢٠٧١" للكاتبين كريس رابلي

ودانكين ماكميلان

هند محمد سمير محمود خليل

### المستخلص

إن الهدف من هذه الدراسة هو دراسة الممارسات المسرحية كأداة فعالة يمكن أن تعالج أزمة تغير المناخ بشكل إيجابي وأن تصلح السلوك البشري فيما يتعلق بالبيئة. فكما تشير البيانات العلمية المرتبطة بالبيئة إلى أن العالم بات على خطر وشيك الحدوث سيغمر البشرية كلها إذا لم يتم اتخاذ إجراء استباقي جذري إثر ما يقوم به الإنسان تجاه البيئة من تلوث وتغيرات مناخية وزيادة في معدلات ثاني أكسيد الكربون التي يستنشقها الإنسان الأمر الذي ينجم عنه أمراض سرطانية عديدة. ستقوم هذه الدراسة بتحليل مسرحيتين ذات الأداء المنفرد اللتان شارك في كتابتهما عالم وكاتب مسرحي وهما "عشرة بليون نسمة" (٢٠١٣) للكاتب ستيفن ايموت و"٢٠٧١" (٢٠١٤) للكاتبين كريس رابلي ودانكين ماكميلان. وسوف يستخدم الباحث نظريات النقد البيئي بصفة عامة ونظريات النقد المتعلق بتغير المناخ بصفة خاصة لفحص هذه المسرحيات وتوفير إطار نظري لدراسة النصوص المختارة والبحث عن إجابة لهذه الأسئلة: هل تتشابه المشاكل المتعلقة بالبيئة وتلك التغيرات الاجتماعية؟ هل يمكن للعمل الأدبي المساهمة في معالجة المشكلات الخاصة بالبيئة مثل تغير المناخ والإحتباس الحراري؟

**الكلمات المفتاحية:** النقد البيئي، علم البيئة (الإيكولوجيا)، الإيكولوجيا المتعمقة، الجائحة، الزيادة في عدد السكان