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"It's wanting to know that makes us matter": Epistemological and Dramatic Issues in Tom Stoppard's *Arcadia*

John Fleming

Introduction: dramatic and epistemological background

- 1 While Tom Stoppard has written a wide variety of award-winning radio plays, television plays, adaptations for the stage, and film scripts, his reputation as one of the pre-eminent contemporary writers rests most firmly on his canon of original stage plays.¹ In particular, Stoppard has written eleven major plays: *Rosencrantz and Guildenstern are Dead* (1967), *Jumpers* (1972), *Travesties* (1974), *Night and Day* (1978), *The Real Thing* (1982), *Hapgood* (1988), *Arcadia* (1993), *Indian Ink* (1995), *The Invention of Love* (1997), the trilogy *The Coast of Utopia* (comprised of *Voyage*, *Shipwreck*, and *Salvage*) (2002), and *Rock 'n' Roll* (2006). In these eleven works, Stoppard deliberately crafted a full-length play for the West End or for one of the subsidized, establishment theatres (Royal National Theatre, Royal Shakespeare Company, or Royal Court Theatre). Cumulatively, these eleven works embody Stoppard's epistemological views and encapsulate most of his major concerns as a writer. Notably, with the exception of *Rosencrantz and Guildenstern are Dead*, Stoppard has always started with a clear idea of the intellectual and thematic ideas that he wishes to explore.
- 2 While comedy is almost always a central feature, Stoppard has consciously explored different narrative techniques. He once remarked that ultimately he would like "to have done a bit of absolutely everything" (Watts 47). Indeed, eclecticism is one of the hallmarks of Stoppard's canon, and it is a trait that makes his work appear fresh, vital, and enduring. Though moving through a diversity of subjects, a constant in Stoppard's

work has been his preoccupation with aesthetics, with the formal properties of play construction, and above all with style. For Stoppard, a writer's only obligation is "to write well" (Freedman C13), and plays are "good" or "important" if the writing is "of a very high order" and not because of its social content (Hudson 68). While Stoppard champions style, it is not an end in itself, as Thomas Whitaker asserted in his 1983 book *Tom Stoppard*. Stoppard's stylistic bravura and theatricality are always yoked to, and in service of, some more substantial ideas, ideas often antithetical to Whitaker's interpretations.

- 3 While being a relentless experimenter who writes about a broad array of topics, Stoppard's work shares traits with both modernism and postmodernism. In "Postmodernism: Roots and Politics", Todd Gitlin distinguishes among premodernism (realism), modernism, and postmodernism. The premodernist work seeks unity of vision, continuity, sequence, causality in time or space, and a single narrative voice. The modernist work aspires to

[a unity that is] constructed, assembled from fragments. [...] It shifts abruptly among a multiplicity of voices, perspectives, materials. [...] The orders of conventional reality—inside versus outside, subject versus object, self versus other—are called into question. [...] The work composes beauty out of discord. (349)

- 4 Stoppard's use of multiple perspectives, parodic echoing, and seeming instability (some of the traits that lead critics to label him postmodern) are characteristic of the modernist temperament that Gitlin describes. This is especially true when contrasted by Gitlin's vision of postmodernism:

The search for unity has apparently been abandoned altogether. Instead we have textuality, a cultivation of surfaces endlessly referring to, ricocheting from, reverberating onto other surfaces. The work calls attention to its arbitrariness, constructedness; it interrupts itself. Instead of a single center, there is pastiche, cultural recombination. [...] Not only has the master voice dissolved [...] the implied subject is fragmented, unstable, even decomposed; it is finally nothing more than a crosshatch of discourses. (350)

- 5 While Stoppard's plays are known for stylistic flair, nothing in a Stoppard work is arbitrary; underneath the sometimes-disorienting surface, the plays are highly ordered and underpinned with logic and a point of view. Furthermore, Stoppard's emphasis on linguistic matters and rational discourse places him much more firmly in the camp of modernism than it does in the nonintentional, visual montages of a postmodern theatre artist such as Robert Wilson or in the deconstruction-based work of The Wooster Group.
- 6 Conversely, perhaps the way in which Stoppard may most be seen as postmodern is if one uses the criteria of how one responds to uncertainty in the world. According to Alan Wilde, modernists exhibit anxiety and a sense of loss whereas postmodernists are characterized by "a willingness to live with uncertainty, to tolerate and, in some cases, to welcome a world seen as random and multiple, even, at times, absurd" (Wilde 44). Many of Stoppard's plays show an acceptance of uncertainty and instability as being central components of the world; however, his plays also embrace order, logic, and those things that provide stability in an uncertain world. The both/and quality of Stoppard's work allows him to cut across categories and to attract admirers from different critical, theoretical, and ideological backgrounds.
- 7 In "Is postmodernism?: Stoppard among/against the postmoderns", Michael Vanden Heuvel offers an excellent assessment of how Stoppard is and is not a postmodernist.

While Stoppard explores many postmodern issues and employs postmodern techniques such as pastiche and intertextuality, he remains fundamentally at odds with "postmodern social theory and its image of the human subject" (213), and Stoppard works through postmodernism "back to more traditional assumptions and beliefs" (220). While Stoppard's plays often exhibit traits of postmodernism, from an epistemological perspective it may be more useful to view his work as continuing and extending high modernism's experimentation with aesthetic expression.

- 8 Like modernist writers he admires (e.g., James Joyce, T.S. Eliot, and Oscar Wilde), Stoppard downplays the social function of art, rarely writing works that directly engage with the social-historical moment. Instead he rigorously pursues aesthetic effect and innovation as he explores various intellectual ideas that interest him. The ideology that informs his work is decidedly conventional: Stoppard firmly believes in the values associated with western, liberal humanism. He told the critic Mel Gussow: "I'm a conservative with a small c. I'm a conservative in politics, literature, education, and theatre. My main objection is to ideology and dogma" (37). Elsewhere, he noted "I write out of my experience as a middle-class bourgeois who prefers to read a book almost to doing anything else" (Hudson, Itzin, and Trussler 67). Indeed, Stoppard lives the life of the bourgeois intellectual, and his work revolves around the values, views, and ideology of that lifestyle. In a 1977 article, Stoppard declared his belief in "western liberal democracy, favoring an intellectual elite and a progressive middle class and based on a moral order derived from Christian absolutes" ("But for the Middle Classes" 677). Though never practicing any specific religion, Stoppard has been a steadfast theist. Likewise, I suspect that Stoppard's concept of moral absolutes is something along the lines of the United Nations Universal Declaration of Human Rights, a profession of the appropriate ethical treatment of human beings. Overall, Stoppard can be characterized as a patriotic, conservative, bourgeois, middle-class values/upper-class income, intellectual who rejects moral relativism, and who eschews rigid ideology in favor of a set of core values that include personal freedom, freedom of conscience, and freedom of expression.
- 9 In contrast to what I have stated, postmodern and poststructuralist critics of Stoppard's work often elevate form to the level of content and meaning as they valorize form in and of itself, thereby deprivileging the dialogue as they argue that Stoppard's plays accent the unknowability of the world, the elusiveness of true knowledge, the fallibility of human memory, and the relativity of almost all aspects of life. As will be seen in the ensuing discussion of *Arcadia*, I think epistemologically Stoppard is more traditional, someone who champions the pockets of order amid the sea of uncertainty. Likewise, Stoppard frequently presents a both/and paradigm, a situation in which seeming opposites are held up as mutually valid. Kenneth Tynan suggested the paradoxical nature of Stoppard and his work when he speculated that Stoppard believes in "a universe in which everything is relative, yet in which moral absolutes exist" (56). This both/and paradigm permeates much of Stoppard's canon and is most clearly exhibited in *Arcadia*.
- 10 Within Stoppard's body of work, *Arcadia* weds two phases of his career. *Arcadia* represents the joining together of the *Jumpers* and *Travesties* stylistic display of an intellectual concept with the more emotional, narrative style of *Night and Day* and *The Real Thing*. Stoppard comments: "*Arcadia* is as full of theses as anything I've ever done, but if I hadn't found my way into a kind of detective story, none of it would have been

worth a damn dramatically. I think it's the first time I've got both right, the ideas and the plot" (Spencer). In the same interview, Stoppard adds: "I think *Arcadia* is probably where all that was leading. It's lost the comic songs and the parodies, but it's a similar combination of larking about and trying to deliver some kind of thesis" (Spencer). For its mix of comedy, intellectual ideas, structural intricacies, effective story-telling, and emotionally-engaging characters, *Arcadia* is often considered Stoppard's finest play.

1. Intellectual origins of *Arcadia*

- 11 In a 1989 profile piece on Stoppard, friend and actor John Wood said: "When I first met [Tom] in the sixties, there was a kind of anarchic joy in him, and it's still there, but it contains its own impossibility now. I can't say that life has disappointed Tom, but I think he once thought there must be a system behind the absurdity, and he found out there isn't" (Schiff 224). The article proceeds to mention that Stoppard had just finished reading James Gleick's *Chaos: The Making of A New Science*, and that he knew that chaos theory could be the seed of a new play. Chaos theory attempts to systemize that which appears to function outside of any system. It describes a world in which there is chaos in order, but also order in chaos. Stoppard comments: "[Chaos mathematics is] a reconciliation between the idea of things not being random on the one hand and yet unpredictable on the other hand" (Fleming 19). In *Hapgood*, Stoppard uses the quantum mystery of the dual nature of light as both wave and particle as a metaphor for the dual nature of human personality, the idea that individuals have a "public self and a private self" (Gussow 79). Likewise, chaos theory is examined not only for its scientific properties but also for its metaphoric potential. Stoppard elaborated:

[Chaos mathematics] suggested itself as a quite interesting and powerful metaphor for human behavior, not just behavior, but about the way it suggested a determined life, a life ruled by determinism, and a life which is subject simply to random causes and effects. Those two ideas about life were not irreconcilable. Chaos mathematics is precisely to do with the unpredictability of determinism. (Gussow 84)

- 12 While "chaos theory" has entered the lexicon, it is an imprecise and misleading term. It is imprecise because under its umbrella are a diverse range of fields that utilize and concentrate on different aspects and applications of the paradigm. More significantly, the term "chaos" is misleading as it connotatively privileges the unpredictable aspect of the theory. Originally coined in 1975 by James Yorke, the full and "proper name is 'deterministic chaos'" (Porusch 238). This more accurate phrasing conveys that it is a both/and paradigm in which the seemingly contradictory ideas of chaos and determinism are interrelated. This non-hierarchical reconciliation of seeming opposites is at the core of deterministic chaos and its description of the physical world. This combination of apparent randomness yet underlying order epitomizes the structure of many of Stoppard's plays.
- 13 In his chapter "Epistemological Certainty in Tom Stoppard's *Arcadia*", Daniel Jernigan aptly notes that in plays such as *After Magritte* and *Jumpers*, Stoppard likes to employ dramatic situations where "bizarre elements [are] empirically proven to have much more natural explanations" (127). Rather than "the championing of epistemological pessimism" (127) "the scientific method of conjecture and refutation... is central to Stoppard's epistemological ideal" (128). While there is still uncertainty, Stoppard likes to find order, rationality, and logical explanations. Contrary to John Wood's statement,

there is a system behind the apparent absurdity, and deterministic chaos provides that framework for uncovering the hidden system.

- 14 Newton's classical mechanics describes an orderly world, but scientists now believe that the greater part of nature follows the principles of deterministic chaos. Though determined by equations that are understood, natural systems such as the weather, population growth systems and heartbeat patterns behave in ways that cannot be predicted. Thus, even simple equations can create complex patterns. Variations are partly due to "the butterfly effect", a term that means dynamical systems have a sensitive dependence on initial conditions: seemingly minor changes in input (e.g. rounding the number .506127 to .506) can cause major variations in outcome. The behavior of these systems cannot be strictly predicted; however, the equations that govern such systems follow universal mathematical laws. Gleick asserts that one of the most important aspects of deterministic chaos is that "the laws of complexity hold universally, caring not at all for the details of a system's constituent atoms" (304). This seeming paradox of being highly sensitive to local conditions while also participating in a universal pattern was likely part of the metaphoric appeal to Stoppard.
- 15 While Stoppard saw deterministic chaos as a rich metaphor, he felt it was "too abstract and unmanageable" on its own (Hickling 15). The other starting point of *Arcadia* came a couple of years after reading Gleick's book, and from a seemingly unrelated source. Stoppard states:

I was thinking about Romanticism and Classicism as opposites in style, taste, temperament, art. [...] Retrospectively one looks at poetry, painting, gardening and speaks of classical periods and the romantic revolution, [and then] one starts dividing people up into classical temperaments and romantic temperaments--and I suppose it's not that far from Hapgood in a way. The romantic temperament has a classical person wildly signaling, and vice versa. (Gussow 90)
- 16 Stoppard admits that the final text "says very [little] about these two sides of the human personality or temperament. I don't think it's in the play. It's by no means in the foreground. And yet, it's firing all around the target, making a pattern around the target" (Gussow 91). The yoking of the differences between Classicism and Romanticism to deterministic chaos provides a recognizable parallel to describe the shifting scientific paradigm, from the orderly world described by Newton's mechanics to the complex patterns created by deterministic chaos. Once Stoppard latched onto the idea of having scholars investigating past events, the form of *Arcadia* came into shape.
- 17 Deterministic chaos is grounded in nonlinear mathematics, and appropriately Stoppard constructs *Arcadia* in a nonlinear manner—the scenes alternate between the early 1800s and the present. While some literary critics view any nonlinear play as being "chaos-structured", Stoppard deliberately crafted a structure that embodies essential attributes of deterministic chaos. In a 1993 interview, when Stoppard was questioned about the intricacies of *Arcadia*'s alternating scenes, he was initially reticent about revealing too much. Eventually, he conceded: "I have a secret agenda, but I wouldn't lay it on the audience. The play mimics the way an algorithm goes through bifurcations into chaos" (Fleming 24). In an interview the next day, he added: "The play bifurcates two or three times and then goes into the last section which is all mixed up. So, it's very chaos structured" (Demastes and Kelly 5).
- 18 The nonlinear bouncing between time periods suggests disorder, yet lurking underneath is a tightly ordered dramatic structure. There are seven scenes—three in

the past, three in the present, and the chaotic seventh scene where the periods mix. Within that scene there are six sub-scenes: two of only the past, two of only the present, and two where the different periods share the stage. Thus, as with chaotic systems in the physical world, there are a series of bifurcations but even within the chaotic region, there are pockets of order, and so overall, this nonlinear play exhibits a fine, underlying structure.

- 19 While the macro level of the play's structure mimics an iterated algorithm, the micro level features a series of repetitions, parallelisms, textual echoes, and other acts of doubling. This structural layering is another example of deterministic chaos. As detailed in Gleick's book, Benoit Mandelbrot coined the term *fractal*, which from the Latin literally means "irregular"; in practice, fractal, above all, means self-similar. Self-similarity is symmetry across scale. It implies recursion, pattern inside of pattern—a trait typical of Stoppard's dramaturgy. The self-similarity of fractal construction is abundant in nature and abundant in Stoppard's text. Self-similarity of dialogue, situations, characters, props, costumes, and musical accompaniment are all evident; indeed, it is the aspect of deterministic chaos that Stoppard uses most frequently. From a thematic point of view, this similarity across scales is significant because in dynamical systems it signifies that some quality is preserved while everything else changes: "some regularity lay beneath the turbulent surface" (Gleick 172). Metaphorically, it suggests that Stoppard is more interested in looking at, or looking for, similarities beneath external differences.
- 20 One way Stoppard achieves the effect of self-similarity is through a series of recurring topics mostly revolving around sex, literature, science, and gardening. At the same time, Stoppard carefully constructs the play so that its structure involves a dynamic interplay between intellectual ideas, a more human/emotional component, and entertaining elements in the form of jokes and literary detective story.

2. Carnal embrace and other irregularities

- 21 Before introducing the scientific and artistic themes, Stoppard begins with a comical exchange that embodies the human dimensions of the play's intellectual conceits. The precocious 13-year-old pupil Thomasina queries her 22-year-old Byronesque tutor Septimus on the meaning of "carnal embrace" and is told: "Carnal embrace is the practice of throwing one's arms around a side of beef" (1). Thomasina eventually sees through this punning evasion and wants to know "the true meaning of things" (3), and thus is told: "Carnal embrace is sexual congress, which is the insertion of the male genital organ into the female genital organ for purposes of procreation and pleasure" (3). This clinical definition removes the mystery and intimacy of human sexual relations, and in the process seems incomplete. It is a motif that runs throughout the play. Whenever the characters try to fix and understand reality, whether it be through the use of language, through the use of narratives designed to control and explain their experiences, or through the study of science, they discover that life is not so easily confined and defined.
- 22 Having established sexual imbroglios and comedy as core components, Stoppard moves the play into thematic realms. Science has long been a major way in which humans have sought to understand the world around them, and in the opening scene Thomasina is studying Newtonian science and Euclidian geometry, modes of thought

that see the world as linear, stable, and ordered. In human terms, Newton and his classical laws of motion seem to leave no room for unpredictability and free will. In the first scene, Thomasina explains the ramifications of what would happen if everything behaved according to Newton's laws of motion. She says: "If you could stop every atom in its position and direction, and if your mind could comprehend all the actions thus suspended, then if you were really, really good at algebra you could write the formula for all the future; and although nobody can be so clever to do it, the formula must exist just as if one could"(5). This paraphrase of Pierre-Simon Laplace's causal determinism suggests a deterministic, mechanical universe; it is one of strict order, regularity, and predictability. But Thomasina has already begun to intuit that this view of the universe is incomplete. She tells her tutor: "When you stir your rice pudding, Septimus, the spoonful of jam spreads itself round making red trails like the picture of a meteor in my astronomical atlas. But if you stir backward, the jam will not come together again" (4-5). Her seemingly simple observation points to the Second Law of Thermodynamics and the increasing disorder in the universe.

- 23 Since comprehending scientific concepts can sometimes be difficult, Stoppard aids his audience's understanding by paralleling the shift in the scientific paradigm to the analogous transition from Classicism to Romanticism. Here, Classicism metaphorically corresponds to Newtonian science and Romanticism to deterministic chaos. In the play, these artistic movements are embodied in the landscape gardening of the Croom family home. Until the mid-1700s the garden adhered to the classical aesthetics of symmetry, geometrical regularity, and formal simplicity; however, this arrangement was replaced by Capability Brown's asymmetrical style. In the first scene the audience learns that the garden is undergoing yet another alteration as landscape gardener Mr. Noakes is transforming it into a Romantic wilderness, the "picturesque", Gothic style of untamed nature. Noakes is referred to as "The Emperor of Irregularity" (85). These gardens, like the scientific paradigms they parallel, offer competing views for what is the "true" nature of the world. Just as the garden moves from regulated order to irregularity, so too has science's view of how nature constructs itself.
- 24 In the play, the idea of irregularity as the organizing principle of nature is first laid out in scenes three and four via Thomasina's declaration that she has discovered a "New Geometry of Irregular Forms" (43), an idea that includes a prescient sense that irregularity is the organizing principle of nature. At the same time, Thomasina's words are more of a metaphorical statement—the iteration of her equation could produce a picture of a leaf, but not a leaf itself. In the play, Valentine explains iteration and its significance. Iteration is a mathematical process that was first used on nonlinear equations in the early 1970s. It is a feedback loop in which you take the solution of an equation and plug it back into the equation and solve it again, and then continually repeat the process. Until the 20th century mathematics was classical, but Valentine explains: "Then maths left the real world behind, just like modern art. Nature was classical, maths was suddenly Picassos. But now nature is having the last laugh. The freaky stuff is the mathematics of the natural world" (45). Deterministic chaos has shown that irregularity is one of the building blocks of life.
- 25 Linking the two periods together is the fact that while Thomasina's theory prefigures fractal geometry, Valentine is actually using this iteration process in his study of population changes in biology. He proceeds to explain one of the fascinating features of these iterated algorithms: "The details change, you can't keep tabs on everything, it's

not nature in a box. But it isn't necessary to know the details. When they are all put together it turns out the population is obeying a mathematical rule" (45). Here, one sees the paradoxical quality of deterministic chaos—any individual dynamic system that goes through a series of bifurcations and transitions between orderly and turbulent is both highly sensitive to local conditions and also participates in a universal pattern.

- 26 The metaphoric implications of Stoppard's use of the new science reveal much about his personal perspective and predisposition. In a 1993 article on chaos theory and theatre, Michael Vanden Heuvel argues that some contemporary theorists and artists looking at quantum physics and deterministic chaos, as well as post-structuralist theories of language, embrace the idea that since prediction has given way to probability, the defining features of the world are indeterminacy, uncertainty, disorder, and chance (255). In contrast, while acknowledging unpredictability, Stoppard focuses on what is stable and ordered. In their book *Turbulent Mirror: An Illustrated Guide to Chaos Theory and the Science of Wholeness*, John Briggs and F. David Peat discuss chaos theory via the metaphor of a turbulent mirror with one side of the mirror being concerned with the move from order to chaos and the other side with the move from chaos to order. In crafting *Arcadia*, Stoppard has emphasized the ideas that correspond to the mirror itself and to those aspects that mark the move from chaos to order. In short, Stoppard stresses the process of recognizing the order within disorder, seeing the structure hidden within the seemingly random.

- 27 Looking closer at the play, one sees that between the poles of universal laws and indeterminacy, science is offering a new way of understanding the world. In a sublimely passionate speech, Valentine explains:

The unpredictable and the predetermined unfold together to make everything the way it is. It's how nature creates itself on every scale, the snowflake and the snowstorm. It makes me so happy. To be at the beginning again, knowing almost nothing. Relativity and quantum looked as if they were going to wipe out the whole problem between them. A theory of everything. But they only explained the very big and the very small. The universe, the elementary particles. The ordinary-sized stuff which is our lives, the things people write poetry about [...] these things are full of mystery, [and] the smallest variation blows prediction apart. [...] The future is disorder. A door like this has cracked open five or six times since we got up on our hind legs. It's the best possible time to be alive, when almost everything you thought you knew is wrong. (47-48)

- 28 Characteristic of deterministic chaos being a both/and paradigm, Stoppard's emphasis on those regions of order and stability is balanced with a healthy celebration of uncertainty. Valentine is genuinely pleased that the old scientific foundation has crumbled and that there are still many mysteries that may never be solved. Indeed, the play as a whole acknowledges the difficulty of truly knowing anything. Hannah offers the sobering perspective: "It can't prove to be true, it can only prove not to be false yet" (74).² Hannah proceeds to discuss the fundamental humanness of epistemological processes:

It's *all* trivial--your grouse, my hermit, Bernard's Byron. Comparing what we're looking for misses the point. *It's wanting to know that makes us matter*. Otherwise we're going out the way we came in. That's why you can't believe in the afterlife, Valentine. Believe in the after, by all means, but not the life. Believe in God, the soul, the spirit, the infinite, believe in angels if you like, but not in the great celestial get-together for an exchange of views. If the answers are in the back of the

book I can wait, but what a drag. Better to struggle on knowing that failure is final.
(75-76, second emphasis mine)

- 29 The line "it's wanting to know that makes us matter" strikes to the heart of Stoppard's humanism. In its depiction of people striving to understand the past and to find the keys that unlock the mysteries of nature, the play is a celebration of the human struggle to obtain knowledge, with meaning arriving as much out of the process as the product. Just as Valentine was invigorated by knowing that "almost everything you thought you knew is wrong" (48) so, too, Hannah is not discouraged by the prospect of failure. Rather than despair, Stoppard embraces a cautious optimism and expresses a resounding belief in human agency rather than materialistic views of life.
- 30 Right after Hannah's speech, Valentine shows how his computer was able to complete the iteration that Thomasina started. As he and Hannah look at the image, he says: "In an ocean of ashes, islands of order. Patterns making themselves out of nothing" (76). It is another case of finding the pockets of order amid a sea of chaos. Likewise, since Hannah ultimately succeeds in proving her theory and since Thomasina's theories are shown to be accurate, *Arcadia* is an affirmation that despite all the indeterminacy, people can use their intellect and intuition to gain knowledge. It suggests that science often works, that people can lead fulfilling lives, that even without all the answers, people can be happy, and that interacting with uncertainty is part of what makes human life worth living.

3. The characters and their competing quests for knowledge

- 31 In the play, Stoppard presents five main characters who are engaged in the quest for knowledge. Thomasina, Septimus, and Valentine are pursuing an understanding of the world from a scientific perspective, while Hannah and Bernard represent the arts and humanities. Characteristic of Stoppard's desire to complicate matters, the three "scientists" are the least Newtonian—Thomasina intuits the shortcomings of the Newtonian model; Septimus is perplexed and made skeptical by her theorems; and Valentine is a working chaotician. In contrast, Hannah and Bernard are more "scientific" in their outlook and approach, and through their respective attempts to interpret the past, Stoppard exhibits classical and romantic temperaments at work.
- 32 Hannah's dominant personality is "scientific" and classical in that she is a champion of the dispassionate intellect. Her research on the evolution of the gardens at the Coverly estate is aimed at documenting "the decline from thinking to feeling" (27). To her, the Romantic movement was a "sham", while the ordered, classical garden represented "paradise in the age of reason" (27). Hannah sees the world in binary terms and privileges thought over emotion, the classical temperament over the romantic. Disliking sentimentality and limiting her emotional expressions to instances of the gains and losses of the intellect, Hannah views emotion as an unwanted irregularity, a potential collapse into disorder. Ironically, to prove her idea that "The Age of Enlightenment [was] banished into the Romantic wilderness" (66), Hannah must rely on instinct and intuition. In short, she embodies Stoppard's notion that Classical and Romantic temperaments are not mutually exclusive, but rather co-exist in people. Again, it is a matter of life being understood via a both/and paradigm as opposed to an either/or model.

- 33 In contrast to Hannah, Bernard embodies the Romantic temperament in that he is more energetic, more passionate, and more prone to intuition. Dressed with a flamboyant flair (15), Bernard's character is one of style over substance. Characteristic of a Romantic personality, Bernard takes a fervently intuitive approach to his research: "By which I mean a visceral belief in yourself. Gut instinct. The part of you which doesn't reason. The certainty for which there is no back-reference. Because time is reversed. Tock, tick goes the universe and then recovers itself, but it was enough, you were in there and you bloody know" (50). While the science level of Stoppard's play acknowledges that the laws of the universe indicate that time can only go forward, Bernard's declaration suggests that human intuition is an aspect of life that is more mysterious, something that cannot be confined and explained by science. Typical of Stoppard's complicating of perspectives, Bernard's gut instinct is proved dead wrong, while Hannah is ultimately able to prove the validity of her instinctually-derived thesis that Septimus was the hermit of Sidley Park. Thus, human intuition is neither completely valorized nor debunked.
- 34 While Bernard's dominant temperament is Romantic, he, too, exhibits traits of the scientific and classical personality. When he tries to reconstruct the story of Byron's stay at Sidley Park, he thinks in terms of strict linearity and order. He accumulates data from a variety of sources, and then tries to make it fit his pre-ordained cause-to-effect pattern. He makes the mistake of starting with a desired conclusion, and only seeks information that will make his line of reasoning sufficiently logical. Bernard's unerring faith in his theory makes the lack of convincing evidence immaterial; he is determined to prove his theory whether it is true or not. While Bernard's arrogance and lust for fame are obvious character flaws, his more subtle shortcoming is that his sought-after explanation is based on a Newtonian paradigm of complete order; i.e., it ignores the complexity and contradiction of real life, such as the fact that Byron took Septimus' book and that one of Byron's letters was burned. Instead of trying to understand how the events actually occurred, he has created an idealized account. His Newtonian narrative is limited, and ultimately is proven false because Bernard has allowed himself to see only what he has wanted to see. Hannah summarizes the problems of Bernard's approach to scholarship: "You've left out everything which doesn't fit. [...] You're arrogant, greedy, and reckless. You've gone from a glint in your eye to a sure thing in a hop, skip, and a jump" (59).
- 35 While Bernard is the object of Stoppard's satire on the excesses of academic ambition and competition, he is also an advocate for another type of knowledge—the understanding that comes from the appreciation of art. Possessing a Romantic temperament, Bernard provides passionate defenses of art, as he argues that art and artistic genius are mysterious realms of life that cannot be quantified in scientific terms: "Parameters! You can't stick Byron's head in your laptop! Genius isn't like your average grouse" (60). Soon Valentine and Bernard argue over what is and is not worth knowing:
- VALENTINE: But it doesn't matter. Personalities. What matters is the calculus. Scientific progress. Knowledge. [...]
- BERNARD: Why does scientific progress matter more than personalities? [...] Don't confuse progress with perfectibility. A great poet is always timely. A great philosopher is an urgent need. There's no rush for Isaac Newton. We were quite happy with Aristotle's cosmos. Personally I preferred it. Fifty-five crystal spheres geared to God's crankshaft is my idea of a satisfying universe. I can't think of

anything more trivial than the speed of light. Quarks, quasars—big bangs, black holes—who gives a shit? How did you people con us out of all that status? All that money? (61)

- 36 Stoppard notes that Bernard's polemic against science is "a kind of performance art" that "does not speak for me" (Hawkes 268). Elsewhere he adds that Bernard is not sincere about his tirade, that it is a form of recreation for him (Fleming 23).
- 37 While Bernard does not mean everything he says, the fiery exchange helps define the characters, and it articulates different epistemological approaches. Valentine takes a traditional, idealistic scientific approach in valuing knowledge itself: the "whats" are more important than the "whos." In other words, for Valentine it does not matter whether Leibniz or Newton first developed calculus, what matters is that calculus came into being (61). On the surface, it is an art versus science debate, but Stoppard is not seeking an either/or response. Stoppard highly values science's contributions, while also repeatedly stating his belief that art "is important because it provides the moral matrix, the moral sensibility, from which we make our judgments about the world" (Hudson, Itzin, and Trussler 66). Instead of choosing between the two, the play champions the contributions made by both the arts and the sciences.
- 38 In contrast to Valentine's scientific sensibilities, Bernard offers a Romantic valorization of art and philosophy. In part, Bernard suggests that great art is timeless, a view that coincides with his desire for a mechanistic universe, i.e., the laws of the Newtonian universe are insensitive to time. The close of Bernard's speech points to the commercialization of knowledge, a theme that flickers in the background of *Arcadia*. Bernard's paradoxical nature is that he wants to prove his theory of Byron not because of any particular literary value it offers, but rather because of the fame it will bring him.³ In contrast to the self-aggrandizement and commercialization of knowledge, Bernard follows up his diatribe with a powerful argument for the value of the liberal arts: "If knowledge isn't self-knowledge it isn't doing much, mate. Is the universe expanding? Is it contracting? [...] Leave me out. I can expand my universe without you" (61). He proceeds to recite the opening lines from Byron's poem "She Walks in Beauty." While science focuses on the physical universe, Bernard offers an eloquent articulation of how art affects one's personal universe. In contrast to his reasons for pursuing the Byron story, here, Bernard takes a knowledge-for-knowledge's sake approach as he stresses how knowledge, particularly that gained from art, has value for its abstract ability to enrich human life on a personal, non-utilitarian basis.

4. Bifurcating into chaos: the final scene

- 39 In the seventh scene the play's ideas are manifested in human terms as the richness and complexity of Stoppard's characters, themes, and dramatic structure coalesce. It is a scene rich with imagery, many revolving around heat. Steam engines, thermodynamics, sexual passion, and candles are all present. To varying degrees, the moments that involve these items or ideas involve construction or destruction as they can be life affirming or life denying. Typical of Stoppard's both / and world view, the very end of the play is a mixture of the two, as the audience's knowledge of Thomasina's impending death is preceded by the dance of life.
- 40 At the beginning of this "chaotic" scene, Stoppard employs self-similarity in costuming and dialogue as the contemporary characters are dressed in Regency clothes, and there

is a textual echo from the first scene as once again a teenage woman asks a twenty-something male scholar: "Do you think I'm the first person to think of this?" (73). The question again revolves around a deterministic universe, with Chloë positing that the world tries to be deterministic but "the only thing going wrong is people fancying people who aren't supposed to be in that part of the plan" (73). Valentine adds: "Ah. The attraction Newton left out. All the way back to the apple in the garden" (74). Stoppard uses wordplay to link sexual attraction to science (Newton's gravitational attraction as well as an allusion to deterministic chaos's "strange attractors" that help govern turbulent systems). In addition to being a good joke, it suggests the way unplanned sexual attractions (such as an extra-marital affair) can disrupt a stable system. Its invocation of the recurrent apple is not only Newton's apple, but it also alludes to the Genesis story of the Fall and Adam and Eve's expulsion from the Garden of Eden, the Biblical Arcadia.

- 41 As the scene progresses Stoppard resumes his linking of sex and science. The double meaning of "the attraction Newton left out" is extended when Thomasina explains that Newton's determinism is disproved by "the action of bodies in heat" (84). Thomasina explains the unidirectional flow of the Second Law of Thermodynamics that undermines the Newtonian world view; at the same time, Lady Croom makes clear the sexual double entendre: "The Chater would overthrow the Newtonian system in a weekend" (84). Typical of Stoppard, a stage effect reinforces the connection between "bodies in heat" in physics and the same term as applied to erotic passion. The steady, droning beat of the Newcomen steam engine and the flirtatious piano music of Lady Croom and Count Zelinsky accompany the moment when Thomasina reads the French essay about how the heat equation does not follow Newton's laws.
- 42 The joke that sexual attraction is the attraction Newton left out is one of Stoppard's metaphorical conceits for the difficulty in mapping out individual destinies. Newton's laws work when they operate in a vacuum—it is the friction of the real world that destroys predictability. Similarly, the multiple variables and contingencies of reality, including love and the heat of sexual passion, preclude predictable, deterministic lives. The richness of deterministic chaos as a metaphor for human life and interactions is its paradoxical quality. There is the sense of determinism, of the inability to control with whom one falls in love, yet the play also shows free will in action as Septimus decides not to consummate the relationship with his pupil. In *Arcadia*, the characters experience both determinism and unpredictability, both fate and free will.
- 43 As scene seven develops, the plot bifurcations move into a chaotic region as the characters from the different periods share the stage. Again Stoppard theatrically utilizes self-similarity as, "*doubled by time*", Septimus and Hannah turn the pages of Thomasina's iteration (78). In Trevor Nunn's 1993 London staging, Hannah was positioned over Septimus' shoulder, and they simultaneously turned one page, then another, then back one, and forward one. This temporal recursion was not only aesthetically pleasing but again suggested the notion that despite external differences some quality was preserved. While Hannah hopes that the science indicates that "the world is saved after all", Valentine clarifies: "No, it is still doomed. But if this is how it started, perhaps it's how the next one will come" (78). Similarly, in the second chaotic region, after the second "*doubled by time*" moment where Septimus and Valentine comprehend Thomasina's diagram for heat exchange, Thomasina "*cheerfully*" confirms

Septimus' conclusion that "we are all doomed" (93). In both instances the characters do not respond pessimistically, but rather remain accepting and hopeful.

- 44 The close of the first chaotic region, before it bifurcates back into ordered regions of past and present, is a less obvious moment of the two periods interacting: at the same time that Lady Croom speaks about the Chaters and the dahlia, Hannah silently reads about it: this is the information that disproves Bernard's theory. Thus from a region of disorder comes a new sense of order; Bernard gets his comeuppance. As he colorfully puts it, he is "fucked by a dahlia!" (88), and Hannah gleefully sees to it that the lasting result of Bernard's appearance on "The Breakfast Hour" is egg on his face. The reverse-angle view is that Bernard's life goes from ordered to disordered. His attempt to craft a new high-profile existence has gone dreadfully astray. Again, there is rich interaction between order and disorder, with the two seeming opposites working in conjunction to make things the way they are.
- 45 As the last purely ordered region prepares to give way to the final bifurcation into chaos, the play moves towards its intellectual and emotional climax. As Septimus reads her essay on thermodynamics, Thomasina comes for a late-night waltz lesson. Nunn's staging made the sub-textual sexual tension evident as Thomasina draped herself over Septimus' chair and shoulder, nestling her face into his hair. He absent-mindedly stroked her hand as he continued reading her essay on thermodynamics. But then Septimus' sense of decorum surfaced, and he made Thomasina sit at the other end of the table while they wait for music to which they can waltz.
- 46 The move to chaos is then marked theatrically as the piano music gives way to more modern party music, and fireworks flash (92). Amidst this romantic setting, there is the second moment of "*doubled by time*," and even though the "universe must cease and grow cold" (93), the characters remain happy, even celebratory—Valentine for the joy of scientific, intellectual understanding, and Thomasina for human contact, embodied in the ensuing waltz and kisses she shares with Septimus.
- 47 Ultimately, the scientific and the human dimensions of the play are linked in the staging of the waltz. A waltz is emblematic of deterministic chaos in that there is a prescribed series of steps, but that "deterministic equation" can still yield any number of patterns. In Nunn's staging, Thomasina and Septimus' waltz took them on a few different paths through the room, at one point even dancing between Bernard and Chloë who are in the midst of their hasty and unplanned farewell—one scholar-young female couple is in sync, one out of sync; one coupling is based solely on sex, while the other mixes sexual and intellectual attraction, but ultimately remains a platonic love as they never consummate their affection. Indeed, Thomasina invites Septimus to spend the night with her, but his final answer "I will not" (96) is indicative of free will. However, the deterministic side of life is also acknowledged in this moment, for it is here that Septimus lights Thomasina's candle, with the audience knowing that her fate is to die that night in a fire. Her intuition about the heat death of the universe becomes painfully and poignantly personal. The dance of life ends in mortality, but it is still a happy dance.
- 48 While Thomasina and Septimus enjoy their final waltz, Gus, identical in appearance to Augustus, enters. The doublecasting and use of self-similar costuming disrupts customary markers of order; for a moment there is no telling which character is on stage. But Gus soon proves to be a bearer of order; he provides Hannah with the evidence she needs to prove her theory, a theory that she instinctively knew was

correct, but for which she now has the logical proof. In gratitude for his intellectual assistance, Hannah shows her compassionate, human side by agreeing to dance with Gus. Their waltz is clumsy, and nowhere near as fluid as the other dancing couple, but as music from both periods is heard, moonlight and candlelight bathe the dancing couples. It is a beautifully, moving finale as these "bodies in motion" celebrate both the human intellect and the human heart. By the play's end all the major distinctions—Classical-Romantic, Newtonian-Chaotic, order-disorder, intuition-logic, heart-mind—have interpenetrated each other, showing that the co-existence and interdependency of these seeming opposites is fundamental to the way the world, life, and humans operate.

Conclusion: or unraveling another mystery

- 49 Physicist Stephen Hawking closes *A Brief History of Time* by arguing that if humans discover a "unified theory" that describes the workings of the universe, "it would be the ultimate triumph of human reason—for then we would know the mind of God" (175). When I interviewed Stoppard, he acknowledged that Septimus echoes Hawking when he says: "I inspire by reverence for learning and the exaltation of knowledge whereby man may approach God" (80). Explorations of physics (*Hapgood*) and metaphysics (*Jumpers*) have formed central blocks of Stoppard's canon and personal life. Though *Arcadia* derives from Stoppard's fascination with scientific theories, he remains "skeptical of science as the ultimate truth about the world" (Nathan 262). For Stoppard, life is more mysterious, and indeed *Arcadia* is a play filled with mysteries—Did Byron kill Chater? Who was the hermit of Sidley Park? Who has slept with whom? Does the universe obey the laws of Newton? Of entropy? Of both? Most of the play's mysteries are solved, but one of the great unanswered mysteries is why does Gus not speak? Who is this "natural genius" with psychic-like abilities, but who never utters a word? When I posed this question to Stoppard, he replied:
- 50 [Gus] is about as far as I'm prepared to go into metaphysics, I suppose. By which I mean, intellectually or temperamentally—I don't know which it is—I don't believe in a mechanistic universe. I don't think that's a complete description. So Gus represents, I suppose, my feeling that there is something more mysterious than that. And we don't know how it works, and there's no point in my explaining Gus because that would say I do know how it works. But in the first place, I don't know how it works; in the second place I don't think anybody does know; in the third place I don't think it's possible to know; in the fourth place I don't think it's necessary to know. It's that kind of feeling. (Fleming 23)⁴
- 51 In *Jumpers*, Stoppard's moral philosopher declares "there is more in [humans] than meets the microscope" (68), and Gus seems to be an embodiment of that metaphysical belief, of the "mystery in the clockwork" (*Jumpers* 72). Knowledge without certainty and knowledge based on intuition are motifs that recur in Stoppard's work, and as a whole, *Arcadia* helps dramatize Stoppard's world view of life being comprised of a complex, dynamic interaction of randomness, determinism, and metaphysics.

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ENDNOTES

1. Stoppard has also published one novel, *Lord Malquist and Mr. Moon* (1966), and a few short stories; these works of fiction have not garnered the critical or commercial success that he has achieved in his dramatic writings for radio, television, film, and stage.
2. Daniel Jernigan also analyzes this line for the way in which it reiterates, and privileges, the "scientific method of conjecture and refutation; i.e., that a good scientific theory must be falsifiable" (129).
3. I suspect there is personal subtext for Stoppard in Bernard's getting his comeuppance. Stoppard's personal life, in regards to his relationship with Felicity Kendal, became the source of extensive coverage by the tabloids, which defended their reporting under the claim of the public's right to know. Since *Arcadia* was Stoppard's first major play after the news, many of the preview articles and interviews either touched on Stoppard and Kendal's relationship or on Stoppard's views on recent biographies that revealed the secrets of writers' personal lives. Stoppard's cynicism about artistic or journalistic rationale for printing "the whole truth" shines through: "Nobody ever speaks about the commercial imperative and I think that's the one which is fueling the more respectable gloss on the intellectual rights or wrongs. It really is whoopee time at the publishing house if you find out something really scandalous" (Edwardes 15). Thus, that Bernard's commercially driven enterprise results in great personal embarrassment is sort of Stoppardian poetic justice.
4. In the same interview, Stoppard also reports on Peter Woods' Zurich production: "Gus was treated slightly differently, but in a way which I liked very much; it took a while before you realized he didn't speak. He didn't say anything, but it didn't seem important. It's a while into the play before you think, 'That boy, he hasn't said anything yet,' but there's nothing spooky about it. He files. A lot of time he just hangs out. And I liked it" (Fleming 23). Some 1993 editions of *Arcadia* do not include the Peter Wood-inspired decision to have Gus present throughout most of scene five. In the final text, he exits after Chloë, and Hannah tells Bernard to "give Plautus a kick" (62).

ABSTRACTS

Based off an interview with the playwright, this article examines the scientific sources and artistic inspirations that influenced Stoppard's creation and crafting of *Arcadia*. In probing the play's structure, characters, and intellectual conceits, it also places *Arcadia* within Stoppard's oeuvre, arguing that by melding two previous phases of his career, *Arcadia* marks the pinnacle of Stoppard's playwriting while also standing as the best dramatic embodiment of Stoppard's worldview.

Mêlant entretien avec le dramaturge et analyse théâtrale, cet article s'attache à examiner les sources scientifiques et les inspirations artistiques ayant influencé l'écriture d'*Arcadia*. En choisissant d'explorer la structure de la pièce, ses personnages et les principes intellectuels qui la sous-tendent, l'auteur propose de replacer *Arcadia* dans le contexte global de l'œuvre théâtrale de Tom Stoppard. Située à l'intersection de deux phases dans la carrière de Stoppard, *Arcadia* marque l'apogée d'une écriture dramatique, mais offre aussi au lecteur / spectateur une illustration théâtrale de la vision du monde du dramaturge.

INDEX

Keywords: 20th-century theatre, Stoppard, Newton, epistemology, chaos theory, deterministic chaos, fractal, iteration, thermodynamics, modernism, postmodernism, humanism, romanticism, classicism, landscape gardening, *Arcadia*, Jumpers, Hapgood

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