**Cultural and Scientific Narratives Are Mutually Reinforcing: Tom Stoppard's The Hard Problem and Sarah Treem's The How and the Why**

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Modern evolutionary science has been making its way to the stage. Tom Stoppard, one of the most influential playwrights of our time, explores the nature of altruism and free will and offers a critique of reductionist science in *The Hard Problem*. Sarah Treem, a celebrated TV writer-producer as well as a playwright, explores the dynamics of female competition and mate choice and offers a critique of masculinist science in *The How and the Why*. Intriguingly, each play depicts a female researcher whose perspective on altruism is shaped by her experience of relinquishing a newborn.

Evolutionary theories pose a challenge to beliefs about human nature that feminists and non-feminists have brought to debates about working mothers. Both Treem and Stoppard engage these debates by staging a maternal melodrama against the backdrop of hypercompetitive scientific workplaces with ties to profit-driven industries. In *The How and the Why*, an adoptee and her birth mother, both evolutionary biologists, invoke adaptationist theories to discuss the costs of motherhood for women in science. *The Hard Problem* likewise features an unmarried research psychologist discussing neo-Darwinian theories as it follows her quest to find the daughter she had surrendered for adoption.

*The How and the Why* and *The Hard Problem* thus offer a unique window onto two types of biases that affect people contending with Sarah Hrdy's revelation that women weigh the costs as well as benefits of nurturing.  Separately and together, these plays plays demonstrate the need for debates about human nature to integrate the artistic as well as scientific perspectives of differently situated individuals, including mothers. Not only do the plays make use of disputes that confirm the role of bias in scientific inquiry, but each playwright’s own biases also underscore “the importance of taking into account the reproductive interests of all players involved” to obtain “the mother lode of new insight to be had” (Hrdy Mother Nature 53).

**Introduction**

Bo: I think it’s good to be good, I don’t see that it matters what makes you good.

Hilary: It might matter if people who are out for themselves think they’re justified by biology.

—Tom Stoppard, *The Hard Problem*

What is the role of bias in scientific debates? Should we care whether mothers participate in them? These are questions raised by two contemporary plays about motherhood, evolution, and the socioeconomic forces shaping science: Sarah Treem’s *The How and the Why* (2010) and Tom Stoppard’s *The Hard Problem* (2015). In *The How and the Why*, an adoptee and her unmarried birth mother, both evolutionary biologists, invoke adaptationist theories to discuss the costs of motherhood for women in science. *The Hard Problem* likewise features an unmarried research psychologist discussing neo-Darwinian theories as it follows her ultimately successful quest to find the daughter she had relinquished. Each playwright transforms conventions of the sacrificial maternal melodrama to depict a birth mother whose participation in scientific debates could be vital to the common good. But whereas Treem relies on adaptationist theories to question sacrificial motherhood tropes that would naturalize women’s subjugation, Stoppard relies on sacrificial motherhood tropes to question adaptationist theories that would naturalize selfishness. Treem is a writer-producer for acclaimed television series including *House of Cards, In Treatment* and *The Affair*, and Stoppard has long enjoyed an illustrious career in drama and film. *The How and the Why* and *The Hard Problem* thus offer a unique window, represented by two prominent contemporary dramatists, onto two types of biases that affect people contending with Sarah Hrdy’s revelation that women evolved “to factor in costs...as well as to factor in benefits” of nurturing (1999, 363).

The insights and theories developed from evolutionary biology, behavioral ecology, and evolutionary psychology pose a challenge to beliefs about human nature that feminists and nonfeminists have brought to debates about working mothers. As Hrdy explains, the feminists who dismissed theories of infant attachment as merely “another facet of patriarchal oppression” were engaged in wishful thinking (1999, 491-3). Human infants have “a biologically based drive to seek out and maintain attachments'' with their primary caregivers (2009, 118), and the quality of our early attachments has a lasting impact on how we interact with others. At the same time, however, male Darwinians indulged their own “self-serving self-deceptions'' when they took for granted the naturalness of the “mother as caregiver/father as provider” nuclear family model (1999, 497). It was our ancestors’ cooperative childrearing, rather than a mother’s “selflessly rearing every baby born” (2013, xviii), that led to the unparalleled human capacity for altruism and other prosocial behaviors (2009, 131). The key questions, argues Hrdy, concern what sorts of caregiving networks can allow today’s children to express their other-oriented impulses, and whether institutional changes should complement families’ individually devised arrangements (1999, 494-531). Noting the flourishing of callous attitudes and psychopathic tendencies in stratified, market-based societies, Hrdy speculates with a growing number of evolutionists that unless we resolve those questions successfully, our species may become less empathic, if it doesn’t first render the Earth uninhabitable (Hrdy 2009, 6; Music 2014; Wilson 2019).

Both Treem and Stoppard engage these debates by staging a maternal melodrama against the backdrop of hypercompetitive scientific workplaces with ties to profit-driven industries. Understood as both a drama genre and “way of seeing or sizing up a situation” (Osborn and Bakke 1998, 221), melodrama ordinarily eclipses systemic problems with a sensational plot driven by characters recognized as villains, victims or heroes according to dominant cultural stereotypes (Grimsted 1968). Typically set in the private sphere of the home, Victorian stage melodrama presented the “good” mother as submissive and selflessly devoted to her husband and children. This maternal ideal emerged with the onset of the industrial revolution, when it became customary for middle- or upper-middle-class men to leave home for the workplace while their wives, lacking basic rights, stayed home to rear the children. “Good mother” discourses have functioned ever since to constrain women’s choices while masking the extent to which inadequate wages, workplace inflexibility, sexual coercion, and the unavailability of reliable day care make it easier for the dominant class to categorize poor and working mothers as “bad” (Ladd-Taylor 20). Even after the short-lived family wage system collapsed, making it more socially acceptable for women to work, the “two identities” of professional woman and good mother “remain culturally constructed as mutually exclusive” (Johnson and Swanson 244). A father distracted is being a father; a mother is failing her children,” observes Kim Brooks in her account of contemporary mother-blame; “We fear and scorn her refusal to stay put inside our notions of what a mother should be” (2018, 158-60).

Prevailing “notions of what a mother should be” are easily recruited by maternal melodramas: plays and films about maternal suffering that usually feature a mother who separates from her child (Jacobs 2009, 123). According to Patrick Hogan, parent/child separation and reunion plots can arouse our “empathic feeling of separation anxiety” by triggering “emotional memories” of early attachments (2011, 187). The story of a mother relinquishing her baby may particularly induce us to simulate the feelings of an abandoned child when it recycles tropes of the selfless “good” mother “pitted against her evil witch opposite” (Kaplan 1992, 9). Hence the Victorian melodrama’s unwed or adulterous mother can elicit sympathy only if she repents and pays dearly for her transgression. And yet, precisely because it taps into attachment memories, such a plot potentially challenges the good mother/bad mother dichotomy when it accounts for the dynamics of parent/child attachment over the long term. As Hogan observes, “we all live through a parent/child separation and reunion story” in that, as children, we form representations of our parents that are unlike the individuals we come to know as adults. Furthermore, since parents and children are supposed to separate, the only positive reunion outcome possible is reconciliation, and not the “happily ever after” of romantic plots (199-207). Romantic plots belong to the category of “major genres” whose “happiness goals” (134) are easier to portray as “desirable and attainable.” Parent/child separation and reunion plots belong to the category of “minor genres” that acknowledge “our common fallibility” and “have more accurately expressed human aspiration and experience as they really are—ambivalent and uneasy, except in the act of forgiveness—rather than expressing ways in which human aspiration and experience might best be channeled into the service of social elites” (250-1).

For Treem and Stoppard, it is not enough to “forgive” the mother who fails to meet expectations sanctioned by an elite; it is also necessary to indict workplace structures and attitudes that serve an elite at the expense of working families. To that end, each playwright recasts the “fallen woman” of sacrificial maternal melodrama as a researcher whose experience of relinquishing a newborn informs her perspective on maternal altruism. Embracing a feminist evolutionist approach to mothering, Treem emphasizes the complicity of sacrificial motherhood tropes with a culture of masculine domination. Relying on sacrificial motherhood tropes to promote his religious worldview, Stoppard emphasizes the complicity of a gene-centered approach to altruism with a culture of selfishness. A consideration of each play will show why, separately and together, they suggest that debates about human nature should integrate the literary as well as scientific perspectives of diversely situated women.

**Sarah Treem’s *The How and the Why* (2010)**

Treem’s two-scene play depicts a first-time meeting between two evolutionary biologists: Rachel Hardeman, a twenty-eight-year-old New York University graduate student, and Zelda Kahn, a middle-aged Harvard professor famous for originating the groundbreaking Grandmother Hypothesis (based on the real-life Kristen Hawkes). As Zelda explains, the Grandmother Hypothesis accounts for why women live many years past menopause: “So, the lucky women who lived longer in the Pleistocene epoch helped their grandchildren reach maturity. Thus, their gene pool thrived” (51). Rachel, on the other hand, has a theory (in real life, Margie Profet’s) that menstruation evolved as a defense against penile pathogens, meaning menopause might not be adaptive. Whose theory is right becomes more than an academic question when it comes out that Rachel initiated the meeting upon learning that Zelda is her birth mother. Rachel’s adoptive parents have died; her boyfriend, in danger of being cut from the lab, might desert her if she doesn’t name him co-author of the menstruation theory she hopes to present at a conference for which Zelda is on the review board. When Zelda promises to vouch for Rachel but urges her to take credit for her own theory, a vigorous exchange ensues over whether Rachel should keep the boyfriend, Dean, or possibly end up childless and in Rachel’s words, “alone with [her] research” (42). The dialogue in this scene and Scene Two, which takes place after Dean deserts Rachel for not making him “a priority” (85), takes up science writer Natalie Angier’s arguments against “masculinist” science and medicine in *Woman: An Intimate Geography*.

As Treem explains in the “Playwright’s Note,” Angier’s synthesis of feminist approaches to female anatomy, evolution and physiologyprovided the “intellectual impetus” for this dialogue between an older and younger woman that Treem describes elsewhere as “me talking to myself” (2014). Like Rachel, Treem was twenty-eight when she underwent a crisis. Distressed that her first New York play had gotten “slammed,” with women among its “harshest critics,” she sought out a “powerful woman” in theater who told her, “in a tough love sort of way, to stop writing plays about women.” Treem flouted this mentor’s advice by writing a drama that emerged from her reflections on “what it meant for my generation to be the daughters of the great feminists.” One thing it meant was that “*for the most part,* there are no right or wrong choices.” Echoing Angier’s affirmation, paraphrasing Hrdy, that “mothering strategies are as diverse as mating strategies” (405), and that men, too, can be caregivers (Angier [1999] 2014, 408), Treem quotes Zelda telling Rachel that nowadays, both members of a couple can “take the kids”: “It’s a tree of possibilities, isn’t it?” As evidenced by Rachel’s dilemma, however, women’s choices remain constrained by what men perceive to be in their own interest. To make the best of her choices, Rachel must relinquish what Angier calls “the myth of the perfect mother, the all-loving, all-giving mother” (1999 360).

Rachel’s idealization of maternal self-sacrifice prevents her from successfully negotiating conflicts of interest: between women and men, between women and other women, and between women and their offspring. Though passionate about her research and somewhat disagreeable, Rachel tries to cast herself as the future good mother of Dean’s children, and Zelda as a bad mother who is either desperate for unearned filial love or anxious to eliminate Rachel as a professional rival. Audiences may similarly expect to find out whether Zelda is secretly bereft or fundamentally depraved. Through the character of Zelda, however, the play criticizes the pitting of “selfless” against “selfish” mothers. Though not irreproachable, Zelda helps Rachel in ways that a conventional mother could not. Not only does Zelda use her professional pull to get Rachel a slot in the conference, illustrating Angier’s point, with Hrdy, that “a good mother is a powerful mother” (Angier [1999] 2014, 423; Hrdy 1999 *Mother* 424-5), but she also encourages Rachel to assume a more empowering narrative identity, or “story a person invents to explain how he or she has become the person he or she is becoming” (McAdams 2019, 1).

Rachel’s equation of female virtue with self-sacrifice makes it dangerously tempting for her to define “love” as “giving up everything” (87) for her male partner even as he preserves his options. If Dean marries Rachel at all—he thinks he lacks the “gene” for marriage (18)—he won’t do so before advancing professionally enough to support her. Putting Dean’s name on her abstract, Rachel imagines, will accelerate things (44). But as Zelda observes, it is Dean who has the “longer” “window of opportunity” (46). Why would Rachel, whose resumé already boasts publications and awards, consider risking what Zelda calls her “life-vest” (47) for a floundering boyfriend who won’t risk marriage? One possibility is that Treem uses the couple to dramatize evolutionary biologist Patricia Gowaty’s concern that unless women’s scientific perspectives are accounted for, “masculinist” mate preference theories “will get used as propaganda,” for patriarchal notions of “the right man and the ideal woman” (Angier 384). Dean, for instance, may only have learned that women are “naturally attracted to high-status men with resources,” and that “our core preferences were hammered out long ago” (Angier 364). Such beliefs could incite him to want a financially dependent wife if he has never considered the possibility that some women avoid lower-earning men because they want a partner who can feel “proud” of their success instead of threatened (Angier 370). Likewise, Rachel might feel less pressured to align her behavior with Dean’s expectations if she were to consider good mothers ambitious and strategic (Hrdy 1999), and variation inevitable (Gowaty 2003). Angier peddles her own propaganda when she reduces all of evolutionary psychology to a set of “cardinal premises.” But she intermittently qualifies the target of her criticism as “hardcore” evolutionary psychology (364; 367) or “evolutionary psychology as it is disseminated across mainstream consciousness” (363). Aware of the impact of cultural narratives on people’s behavior (432), she resorts to sarcasm and hyperbole in an attempt to counteract the just-so stories that began circulating when evolutionary psychology was still “gene-centered” and “male-centric’ (Buss 1996, 51-53).

Treem’s play similarly prioritizes the influence of cultural narratives on people’s behavior. Significantly, the first conversation between Rachel and Zelda is about literary models of human nature. Zelda is inspired by the poetry of Edna St. Vincent Millay, who made “no important distinctions between male and female libido” (Saunders 2018, 178). Notably, she quotes Millay’s “I Shall Forget You Presently, My Dear”—a sonnet about the biologically functional brevity of love— as well as two poems that celebrate ephemeral joys: “First Fig” (“My candle burns at both ends”) and “Second Fig” (“Come and see my shining palace built upon the sand!”). Hence, Zelda turns repeatedly to Millay for alternative perspectives on female selfhood, just as Hrdy frequently quotes the woman novelist George Elliot (1999). Rachel, on the other hand, seems as unfamiliar with women’s literary production as she is with their evolutionary perspectives. Noticing Millay’s “First Fig” displayed on Zelda’s wall, she initially imagines that only male poets could have authored such a “ballsy” poem (9). The play thus connects Rachel’s lack of exposure to innovative female-authored literature with her failure to recognize the good mother/bad mother dichotomy as a cultural construct.

The play also suggests that Rachel’s tendency to vilify Zelda prevents her from building useful alliances with other female professionals. Though Rachel’s fear of Dean’s abandonment is understandably amplified by an encounter with her birth mother, Rachel knows nothing of Zelda’s past circumstances. Indeed, by deferring the revelation of their relationship until well past the midpoint of Scene I (37), the play invites audiences to puzzle over the belligerent overfamiliarity of a female graduate student towards a distinguished woman scientist whose help she needs. As if to illustrate the “variation” and “flexibility” emphasized by the feminist evolutionists Gowaty, Barbara Smuts, and Rebecca Dowhan (Angier 385-390), Treem depicts Rachel as strongly monogamous and heterosexual, whereas Zelda has had affairs with women and men. But instead of respecting Zelda’s individuality, Rachel makes sexist comments consistent with the “prescriptive quality” of gender stereotypes: when violated, they are “met with various forms of punishment and devaluation” (Prentice and Carranza 2012, 269). After calling Zelda’s office “masculine,” Rachel tactlessly rejects Zelda’s proposed adjective “significant” (5). When Zelda asks her about her research, Rachel insultingly replies that it wouldn’t interest Zelda because it contradicts Zelda’s own. Such imprudence on Rachel’s part recalls Angier’s assertion that it is “maladaptive” for women to “indict other women for their take on life, for their choice of reproductive and emotional strategy,” even if the “recent history of female-female competition” (404) suggests that women may be inclined to do so when perceiving other women’s choices as threatening to the effectiveness of their own (Fisher 2022).

The link between Rachel’s infantile mother fantasies and her self-defeating sexism is confirmed in Scene Two, set in a dive bar. Upset that her theory was not met with “thunderous applause” (57), Rachel is especially wounded that her most rigorous critic was a woman, Zelda’s former student Bethany: “I thought all women were on the same team” (74-75). Likewise, she experiences Zelda’s momentary absence during the question-and-answer session as a betrayal. Just as infant cries are a form of “evolutionary melodrama” that incites parents to imagine an “emergency” (Thompson 1998), Rachel’s rhetoric of blame is a form of theatrical melodrama that incites mothers to feel guilty: “You left me… to go to the bathroom…while I was being broiled alive” (76). Unable to elicit remorse from Zelda, who reminds her that “a grown-up” doesn’t expect someone to “hold” her “hand,” Rachel next concocts a maternal horror scenario in which a jealous Zelda would have set up her birth daughter to be publicly “taken down” by Bethany, whom Rachel suspects of falsifying data (83). Even when Zelda observes that Bethany’s criticisms are consistent with another female scientist’s findings, Rachel accuses them bothof assuming a fraudulent good mother identity by favoring a theory of “noble,” “selfless” women who menstruate “to sustain their babies'' (80). By showing how peremptorily Rachel impugns her female detractors’ character and motives when questioned, the play suggests that infantile mother fantasies go hand in hand with a tendency to respond poorly to women’s professional opinions.

It is a male-dominated culture, however, that perpetuates infantile mother fantasies while inciting forms of female aggression that “can be hostile and seek to wound” rather than “be creative and seek to engage” (Angier 270-1). The play presents a hypercompetitive environment in which scientists routinely dismiss one another’s claims with mutual accusations of wishful thinking, as did several male and female Darwinians mentioned by Angier (Hrdy, 2013, xii; Wright 1994, 69). Hence the incentive to eliminate competition, epitomized by Rachel’s urge to “destroy” Zelda to “make room” for herself (81), undermines the inherently productive value of biases. Rachel’s theory came to her in a dream suggestive of her unconscious aversion to Dean (86); despite its flaws, affirms Zelda, her “invigorating” presentation advanced knowledge. Zelda’s theory came to her while she was pregnant observing the cooperative childrearing practices of the Hadza (an ethnic people in Tanzania). But a sexist environment pervaded by zero/sum thinking prevents scientists from taking full advantage of the potential for new insights to be generated from interactions between differently situated individuals.Zelda tries to prepare Rachel for the sexism that a theory of toxic sperm will incite:

They are going to want to dismiss you too . . . I have been fighting over thirty years . . . to get people to listen to the Grandmother Hypothesis. To take seriously the claim, by a woman . . . that we are not biologically . . . secondary (53).

Though today’s scientists don’t go around calling women “biologically secondary,” Zelda’s words recall the unwarranted “confidence in their own objectivity” (Hrdy 2013 xvi-xvii) that men have historically displayed while representing women as peculiarly biased (Beauvoir 1989 [1949] xxi). Rachel’s advisor, who calls Rachel “difficult” for refusing his sexual advances, won’t teach The Grandmother Hypothesis, saying feminists like Zelda “thought with their vaginas” (90). An anonymous conference blogger makes sexist comments about Rachel (66). As Zelda tells the shattered Rachel: “You wanted to play with the big boys—this is how they play” (67).

That Rachel regrets presenting solo as soon as she is publicly criticized suggests that her love for Dean is mixed with fear. Paraphrasing Angier’s comparison of abused yet “doggedly loyal” wives with prairie voles whose high cortisol levels cause them to pair-bond automatically (Angier 1999 344), Zelda explains that the anti-stress effects of the hormone oxytocin, released during physical intimacy, distort Rachel’s perceptions of her boyfriend, who lacks, in Zelda’s words, “the ability, the decency, to be happy” for a high-achieving wife (87-88). “Love,” says Zelda, is “the Stockholm syndrome, but gussied up” (88). Though Zelda’s equation of love with a form of trauma bonding between hostage and captive (Koslowski 2020) may be more rhetorical than scientific, research confirms that a romantic attachment figure can “relieve overarousal” and “recruit the HPA axis” and “other means of coping with stress” (Zeifman 421-2). Treem leaves it undetermined as to whether or how much Rachel’s high stress response is innate or acquired. But if socialization doesn’t entirely account for why women are generally more anxious than men (Trivers 1972; Buss 2008), an ideology of female submissiveness is nonetheless at odds with the “congenital” “impulse for liberty” (Angier 395). Conceptualizing nature and nurture “working together” (Eagly 2017), Zelda zeroes in on this ideology when she scathinglycalls Rachel’s idea of love “a fantasy that cowardly young women tell themselves” (88).

Treem repudiates Zelda’s definition of love as much as Rachel’s (2014). Overall, however, the play favors the ambitions of women aiming for no less than the top of highly prestigious careers. When Rachel momentarily considers public school teaching or medical fields, Zelda rejects these out of hand. Is it because Zelda thinks Rachel will be miserable unless she makes her overridingly valuable original contributions to science? Or does Zelda express elitist disdain for whatever resembles female-dominated “service” occupations? Would Rachel accept Dean in such occupations? Perhaps because Treem herself had extraordinary professional ambitions, the play doesn’t address how Rachel might combine work and family without, like Zelda, winning the Dobzhansky Prize (28).

The play does, however, suggest that for the sake of the common good mothers should be represented at all levels of scientific fields. One reason is that mentors sensitive to caregiving can protect budding scientists by offering alternative approaches to problem-solving while putting a check on oppressive attitudes perpetuated by a monoculture. Zelda had no such mentor. At a time when there were “no rules” (102), Zelda finally explains, she had an affair at age twenty-eight with her graduate advisor, Henry Mortimer, with whom she intentionally got pregnant after he left his wife for her. Rachel’s father is the “Father of Hormone Replacement Therapy” (92) and author of the bestselling book *The Eternal Female*—an obvious reference to the real-life Robert Wilson’s 1966 *Feminine Forever*, whose front cover touted hormone replacement therapy as “one of medicine’s most revolutionary breakthroughs.” Upon realizing that her own theory contradicted Mortimer’s conceptualization of menopause as a curable disease, Zelda felt certain she’d have to renounce either her career or the father of her baby, a man “twenty years [her] senior” whom she “revered” and “*loved*” (116).

Whether Zelda’s former reverence for her professor was the manifestation of an evolved attraction to an older high-status man, or whether it was more fundamentally “the emotional reaction of a subordinate” for someone powerful (Keltner and Haidt 2003), Zelda’s cost/benefit decision was not coldly robotic: “All I really remember from that point in my life – is chaos” (120). Nor was it ever truly over for Zelda, who regularly goes back and forth over whether she should have kept Rachel (117). Such ongoing ambivalence is no mere melodramatic construct: for most women, relinquishing a baby is agonizing for the long term (Angier 1999 358; March, 1996). Zelda’s gestures belie her surface poise: upon hearing Rachel express passion for research, Zelda *“Stops. Puts her hand on her heart”* (13); later, as Rachel sobs, Zelda *“reaches out as if to touch Rachel’s head”* (99). But Rachel is too blinkered by melodramatic constructs to notice. When Zelda first proffers advice, Rachel represents her as a fallen woman realizing her maternal identity too late: “You can’t … just come back into my life after all these years and say ‘Believe me. I’m your mother.’” Zelda must remind her: “My dear, you found me” (47). Near the conclusion, after patiently tolerating Rachel’s many insults, Zelda finally slaps her for snidely calling Zelda’s “forte” “abandoning” her “mistakes.” While the slap may confirm the rightness of Zelda’s decision not to attempt single motherhood, it also expresses a hidden pain aggravated by constant judging. Ignoring Zelda’s instantaneous apology, Rachel capitalizes on the slap to rehearse the most cliché of bad mother tropes: “There is something wrong with you (....) something *unnatural* about you” (83).

Not all audience members will sympathize with a woman who had an affair with her married professor, didn’t let him know of her pregnancy, and then placed the baby with adoptive parents, thereby preventing biological father and daughter from becoming acquainted. Nor does Zelda ask for sympathy. But the play does call attention to the mother-blame that lets fathers and society off the hook while offering another reason for why mothers’ absence from scientific fields is dangerous: more errors get made. Observing Rachel’s awe upon learning the identity of her father, Zelda comments that Mortimer’s “clinical studies were underwritten by the pharmaceutical companies” that made millions from hormone replacement therapy (92), just as in real life, the pharmaceutical company Wyeth funded Wilson’s clinical studies to promote the sale of estrogen supplements. Mortimer’s conceptualization of the menopausal body requiring aggressive “therapy” prevailed over Zelda’s view that “our bodies are not sick.” Zelda is now very sick: after losing her uterus due to complications from labor, she underwent hormone replacement therapy (HRT). In keeping with what became known of HRT’s risks, she now has Stage 3 cancer. Mother and daughter reverse roles: Zelda yearns for Rachel’s company, but Rachel, anxious to return to her lab, won’t be there to “hold [Zelda’s] hand” (112). Finally, they commiserate: asked by Rachel how she copes with days of despair, Zelda replies with the play’s final line, “Ride them through” (121). Rachel no longer sees Zelda as an all-giving or wicked mother, but as another woman confronting similar constraints. Such constraints, the play suggests, are supported by the tropes of sacrificial maternal melodrama.

**Tom Stoppard’s The Hard Problem (2015)**

The principal setting of *The Hard Problem* is “The Krohl Institute for Brain Science,” a British think tank founded by American “squillionaire” (13) hedge fund owner Jerry Krohl. Unlike Jerry, who only values research for predicting stock trends, psychology chair Leo Reinhart is open-minded enough to hire Hilary Matthews, a doctoral candidate from a lackluster university who shares Leo’s interest in what philosopher David Chalmers calls “the hard problem” of why consciousness exists. What is the relationship between physical properties and subjective experience? If science can’t account for “what consciousness is like,” then do mind and matter have different properties? (Chalmers, 1995, 201-2). Hilary’s attraction to the Hard Problem is fueled by her desire to believe in a benevolent force that would protect the child she relinquished at the age of fifteen. As she tells her high school friend Julie Chamberlain, she initially “felt relieved” when the adoption was prearranged, since she had no mother or “granny” and “wasn’t into babies.” But, she adds, “it was different when it came to it” (20). Hilary has since prayed nightly for “forgiveness” (9) and a chance to learn that her daughter, Catherine, is “all right” (52). The possibility that her prayers will be answered rests on the hope that human consciousness and altruism operate in a realm distinct from the body. Her outlook is scorned by the play’s neuroscientists, who take for granted that natural selection favored aid-giving behavior due to the benefits accrued to an organism or its genetic kin.

Speaking of *The Hard Problem*, Stoppard remarked: “I’m exploring myself.” Troubled by claims that “altruism has a secret agenda which is self-serving,” he “invented a young woman who doesn’t think that it’s necessarily true. In fact, she’s pretty damn sure it’s *not* true” (“Interview” 2018). We might expect Stoppard to reject Richard Dawkins’ assertion in the 1976 bestseller *The Selfish Gene*—recanted by Dawkins in the 30th anniversary edition—that “we are born selfish” (Dawkins 2006, 4). But the playwright also takes issue with David Sloan Wilson’s view that helping behavior prompted by concern for others emerged because parts of the brain evolved by group selection (Wilson and Sober, 1999). As Stoppard explained in a joint interview with Wilson, evolutionary explanations fail to “touch the mystery of altruism” or “do justice to the way we shape our lives.” People won’t feel morally accountable, he argues, unless they conceptualize “goodness” as something “outside the orbit” of science. Whether or not Stoppard sees himself “mixing facts with values,” as Wilson puts it (Wilson and Stoppard 2015 TVOL), the playwright holds out, like Hilary, for the possibility of a spiritual force that transcends physicality (Lee 2021 711-12). For Stoppard, the universe only seems indifferent to morality because humans can never see “the whole picture” (Demastes 2012, 26). And yet, despite his rejection of evolutionary approaches to altruism, Stoppard enlists them in order to work through what may be his own fantasy of sacrificial motherhood. The result is a maternal melodrama that concludes not with the reunion between mother and daughter, but with Hilary’s transition from the field of psychological science to philosophy.

Throughout the play, Hilary seems in search of her true calling. In some ways, her character sustains the melodramatic fantasy of a penitent fallen woman who dreams only of restoring her maternal role: “I missed her like half of me from the first day.” Her guilt takes the form of classic mother-blame when she pictures herself callously deserting her baby for a career: “I’ve been letting her go, as though I’d swapped her for a doctorate” (44). Hilary’s weakness in math, resulting in a study compromised by missing data, reinforces the Victorian notion that she was destined for motherhood, not science. And yet, if Hilary is correct that “people out for themselves” could “think they’re justified by biology” (40), then dramatically central is what role Hilary could play in scientific debates, and not just whether she can find Catherine. Indeed, though it implies that Hilary too must change, the play is primarily an indictment of the institutional structures and attitudes that exclude her.

The opening scene, presumably set in the late 1990s, points to a mutually reinforcing relationship between indifference to mothers’ perspectives and “an intellectual pecking order in which an egoistic explanation for a given behavior, no matter how contrived, [was] favored over an altruistic explanation” (Wilson and Sober 1999, 8). Hilary, twenty-two, is being prepped for job interviews by Spike, her thirty-year-old tutor who has her role-play the Prisoner’s Dilemma of game theory according to which “two rational prisoners will betray each other even though they know they would have done better to trust each other” (4). Hilary stubbornly opts to sacrifice herself to give the other prisoner, whom she fancifully calls her lover, “a chance to go straight”; when an exasperated Spike demands to know why, she replies “Because I’m good.” Spike’s lecture of rebuke parodies the overreaching claims of gene-centered evolutionary psychology that had yet to incorporate research by feminist and female sociobiologists who were more likely to “see human behavior as responsive to its current environment and capable of within-individual change” (Liesen 2007, 52-3). His declaration that the human brain is “hard-wired for me first” and that “altruism is an outlier unless you’re an ant or a bee,” echoes Dawkins’ explanation of Robert Trivers’ theory of reciprocal altruism as it applies primarily to non-human species (Dawkins 2016 216-244). Furthermore, Spike’s claim that “a statistical tendency” proves “self-interest is bedrock” is contradicted in Scene III by Amal, a Krohl candidate who calls “the Dilemma” “oversold” “with the one-shot game” (18), as research confirms (Raihani and Bshary, 2011). However, audience members need not be acquainted with the science to perceive Spike as less preoccupied with truth than with his own status in a male-dominated environment that equates kindness with being what biologist Maynard Smith called a “sucker.” In addition to uncritically dismissing Hilary’s objections in favor of his totalizing narrative, he exploits his pupil’s pessimism over her job prospects to engage her in a sexual relationship.

Smith’s evolutionary model of interactions between “suckers, grudgers and cheats” only partially accounts for the emergence of human helping behaviors because it treats the individual as the sole unit of selection. Responding to Spike’s example of vampire bats evolving to be “grudgers”—refusing to help a non-reciprocating “cheat”—Hilary correctly points out that “giving something in order to get something isn’t altruism.” Her counterexample is from John Steinbeck depression-era novel *The Grapes of Wrath*: “Rose of Sharon’s baby is born dead, so she gives her breast to an old man dying of hunger, a stranger, just some old man they find lying in a barn where the family is sheltering from a rainstorm” (6). Spike’s reply only considers Rose of Sharon’s own reproductive potential: “Didn’t it make her feel better, though, about her life, her baby, giving her the courage to go on, and have more babies?” Like other evolutionists, Spike relies on standard economic theory to describe helping behaviors as either zero/sum or non-zero-sum. Yet Spike evinces no curiosity as to just *why* nursing a stranger would make Rose of Sharon “feel better,” or why people might be moved by artistic representations of altruistic acts. Wilson would argue that because mutual aid was so critical to survival, humans evolved prosocial tendencies that can be accompanied by positive feelings. Indeed, Steinbeck himself imagined “the evolution of an individual animal into that of a group animal” and saw writing fiction as a way of promoting less self-oriented behaviors (Smith 2010, 38; Turpin, 2009).

Stoppard similarly emphasizes the influence of stories on people’s behavior. Hilary, it would appear, identifies with Steinbeck’s “Okies” who, rather like prehistoric humans, found themselves in situations that made their interdependence impossible to ignore. The biblically named Rose of Sharon particularly resonates with Hilary’s longing to give spiritual meaning to her own unhappy pregnancy outcome. Tormented by thoughts of Catherine being bullied, she strives to be good, hoping that with God’s help, strangers will in turn be good to Catherine (44). Spike sees himself as a player in the story of men who compete “to advance their genes into the next generation” (5). Identifying with alpha males, he uses wealth and status to gain access to nubile females; university teaching, he says, yields “better sex” (47). But despite his contention that “everything is evo-bio” (7), Spike overlooks the human “predisposition to engage in relationship and emotional communion” that informs many women’s evolutionary perspectives on mothering (Dissanayake 2010, 146). In renaming Rafael’s *Madonna and Child* “Woman Maximizing Gene Survival'' (13), he fails to account for the potential of art and ritual to activate feelings of “emotional communion” that we first experience as infants with caregivers (Dissanayake 2010, 144). In characterizing mother/offspring conflict as an aggressive battle of wills, with the baby angrily “screaming to be fed,” he leaves out the charm babies can exert on adults (Hrdy 387; 446; 483), andthe heartbreak mothers feel if they pay attention to the crying of a child they can’t invest in (Hrdy MN 1999 288-317; 455; 487). Not surprisingly**,** Spike has no idea why Hilary begins to sob after he tells her to “get over it” that she’s “an animal” (15).

Feeling dehumanized, Hilary enters the field of experimental psychology in search of evidentiary support for a narrative that would compete with Spike’s. The play’s melodramatic tropes, however, raise questions about whether Hilary even belongs in science. Twice Hilary is seen kneeling in prayer in a classic “penitent fallen woman” pose after she has traded sex with Spike for professional feedback (8, 46). Does the pose represent her God-given purpose to enter scientific debates? Or does it mean that she prostitutes herself for a profession she’s not meant for? The evocation of Steinbeck’s Rose of Sharon has similarly ambiguous implications. For some readers, Rose of Sharon’s smile signals her adoption of a positive new group identity: she has moved from self-centered grieving to rescuing a fellow migrant farmworker (Smith 2010, 46; Royston 2013). For other readers however, the image represents Steinbeck’s masculinist fantasy of women providing emotional and physical nourishment to exclusively male agents of change (Gladstein 1993). Hence the degree to which Hilary can emerge as an active heroine, rather than a victim lacking a hero, turns on how the rest of the play manages the competing messages inhabiting these images.

In Hilary’s workplace, there are no heroes. More than Treem, Stoppard associates indifference to others with an economy in which men pursue wealth and status as if their masculine identity depended on it. In Scene 4 Jerry symbolically emasculates his stock analyst Amal for sharing research with a blogger about a possibly imminent financial crisis. Amal, who is “dressed to ape Jerry,” faints to the floor as soon as Jerry speaks harshly (26). Jerry then calls attention to Amal’s expensive new look before bullying him into signing a pledge not to share his “limp-dick, short-the-market wisdom” with anyone else (27). Amal rightly concludes that Jerry will use his exclusive knowledge to sell securities when they’ve hit the top of the market in order to buy them back cheap (28) while other people lose their savings. Having staked his identity on resembling Jerry, Amal, like Spike, divorces sex from caring relationships. In Scene 9, upon arriving at Hilary’s party with his date, the statistician Bo, Amal pops open a bottle of champagne (a metaphor for ejaculation), and then, to Bo’s dismay, carelessly empties some of it onto the flower (a metaphor for fertility) that Bo has brought as a gift (57-58).

Hilary, then, would appear to be the play’s only potential agent of change. Yet theplay’s lesbian theme recycles angel/witch mother tropes that raise questions about the appropriateness of mothers in scientific debates. We learn that prior to her pregnancy, Hilary was attracted to a female classmate in high school (44). But like a conventional penitent fallen woman, Hilary displays an indifference to sex that reinforces the Victorian separation of maternity from sexuality disputed by feminist evolutionists (Hrdy 1999, xvii). Her pregnancy resulted from “something stupid” (20), and her arrangement with Spike is “a cost/benefit thing” (6). If she doesn’t view lesbianism as a sin, then it is as if her preoccupation with Catherine’s fate has wiped out any erotic desire she might have had. Indeed, the absence of any heterosexual females in Hilary’s workplace can imply that active female sexuality should at most be a phase preceding the fulfillment of women’s true destiny in motherhood. The pairing of the easily intimidated Julie with the bossy neuroscientist Ursula Tarant, who experiments on caged animals, may seem progressive in that it spotlights class and not just gender inequality. Just as Amal expresses disrespect for people in low-status jobs (57), Ursula shows contempt for the perspectives of people lower on the socioeconomic ladder when she boorishly tells Hilary that: “picking a winner from the slush pile is Leo’s little vanity” (21). Yet Ursula is the play’s only character whose name metaphorically reinforces the marginalization of women, particularly lesbians, as subhuman (Lakoff 1973): “Ursula” evokes “sea witch” while Tarant recalls “tarantula.” This can give the impression that while insensitive Darwinian males are still human, Darwinian females are not.

And then there is the statistician Bo, who bursts into tears upon learning that helping behaviors can be self-serving (41). Having fallen in love with Hilary, Bo tries to please her by committing the “sin” (40) of removing outliers from the experiment Hilary conducts on schoolchildren in an attempt to prove that “we start off nice and learn to be nasty” (63). Even if Stoppard were trying to show women turning to one another for intimacy because men treat them like things, a female mathematician who fails to control her feelings for a female supervisor whose math is too poor to notice plays into stereotypes of would-be mothers as bad scientists. That, in turn, could imply that all could be made right if women just went back to being mothers whose “responsibility” is “to maintain the social order without intervening to change it” (Kaplan 1992, 182). It isn’t reassuring, along those lines, that Stoppard’s Acknowledgements name exclusively male scientists and philosophers, and not Ellen Dissanayake’s groundbreaking research on the evolution of art, ritual, and cooperative groups so pertinent to the play’s themes (2010; 2012; 1998; 1988).

We are thus given to wonder whether Hilary, who calls Catherine “possibly the last ‘shame’ baby” (51), expresses Stoppard’s nostalgia for a specifically female submission to God. He might, after all, have portrayed a penitent man praying and weeping, or eventually coming to terms with the distinction between real and ideal mothers. And yet, traces of a coming to terms can be found, in keeping with Hogan’s observation that parent/child reunion stories bid us to acknowledge that “something precious and unrecoverable has been left behind” (Hogan 2011 201). Going over the discarded surveys for measuring schoolchildren’s altruistic tendencies, Hilary discovers the name and birth date of the most significant outlier for niceness: Jerry’s adopted daughter, who turns out to be Catherine. No idealized mother/daughter reunion can take place, however, for as Jerry warns her, preteen “Cathy” has reached an “awkward age”: “she’s normal, don’t imagine she’s a saint” (74). In a way, then, the fantasized mother/daughter dyad does get distinguished from the humanly flawed females it consists of.

That Cathy shares her mother’s extreme altruistic tendencies is consistent with the evolutionist claim that there is a genetic component to altruistic behavior. But it is a “coincidence” that leads Hilary to Cathy, and in Stoppard’s theatrical universe, a coincidence is indistinguishable from a “miracle” (Durham 1980, 174). The playwright thus expresses his “lingering hope” “that there is an organizing principle – even perhaps a god” (Demastes 2012, 26) when Hilary’s grieving for Cathy gives way to her new relationship with God. Living out her own version of the Prisoner’s Dilemma, she takes full blame for the flawed publication. But the gesture is not completely self-denying: Hilary wants to leave Krohl anyway, to study philosophy with “someone at NYU” (David Chalmers?) whose “ideas are …undemonstrable” (74).

Hilary would not necessarily be leaving scientific debates, since “selfish” gene theory quickly brought scientists and philosophers, including Chalmers, into dialogue. We might even imagine her returning to psychology to work with Barbara Smuts, who observes that “since scientists are drawn largely from those who already hold power, one might expect a bias against scientific conclusions that threaten patriarchy” (Smuts 1992, 175). A question raised by the play, however, is whether any research can influence the profit-driven industries threatening the integrity of scientific inquiry when diversity –the Indian Amal, the Chinese Bo, Jerry’s Japanese wife –gets absorbed into the “winner-take-all” culture of a global billionaire class. Disciplinary diversity, too, is portrayed as threatened when Psychology loses funding to neuroscience at Krohl, where the humanities are not represented at all. Only the play’s final scene raises hope, when Jerry mentions odds that remind us of Stoppard’s emphasis on life’s mystery. As the plummeting stock market precipitates a global financial crisis, Jerry coolly cuts short a series of phone calls from desperate brokers. To one broker whose model had predicted the financial crisis could only happen “once every four billion years,” – the time it took for life on earth to emerge – Jerry replies: “there’s probably something wrong with your model” (76). But although Jerry has the play’s last word, Hilary is last onstage: putting Cathy’s photo into her bag, she leaves to investigate from a new angle what is wrong with prevailing models (76). She may yet effect change, albeit on some other stage. The play’s use of sacrificial motherhood tropes, however, can leave us wondering if Hilary’s aim is to abandon, rather than rejoin, scientific debates.

**Conclusion**

*The How and the Why* and *The Hard Problem* give urgency to the importance of mothers’ perspectives to debates about human nature while confirming there is no one “mother’s perspective.” Each play suggests that the most valuable insights arise from interactions between people whose narrative identities are informed by stories representing diverse gender-inflected situations. Zelda evokes Millay who “comes close to articulating Darwinian insights in 21st-century terms” (Saunders 2018, 190); Hilary evokes Steinbeck whose Darwinian musings anticipate between-group selection. However, the differences between the twoplays suggest that a recourse to sacrificial motherhood tropes, like the assumption that obscure work doesn’t matter, might be less automatic if people were better acquainted with innovative literature by women. In that respect, it is significant that Steinbeck’s *The Grapes of Wrath* stoppedthe publication of Sanora Babb’s Dust Bowl novel *Whose Names are Unknown.* Based on notes Babb took while living among migrants, and that Steinbeck may have used for *The Grapes of Wrath* (Dearcopp and Smith 2021, 3), *Whose Names are Unknown* depicts an impoverished father who weeps over his stillborn child (Babb 2004, 45). But although Babb was herself an Oklahoma migrant, the editors of her time determined that another novel on the same subject would have no value. If storytelling, and not just biology, shapes our behavior, then at stake may be our collective ability to honor the literary as well as scientific perspectives of differently situated women. In the words of Joseph Carroll: “It is in works of imagination that people articulate the quality of their experience, make sense of it, and feel its significance and value” (Wilson and Carroll 2016).

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