

Human Experience in a Time of Climate Change through Literature

By

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**Abstract:** This paper analyzes two novels set in the current anthropocene<sup>1</sup> era that show the complexity of the relationship between human systems and natural systems through specific climactically/environmentally destructive events. Both the novels *Flight Behavior* and *Heat & Light* show the intersecting conflicts arising from human relationships/systems, religious systems, and natural systems in the anthropocene through a realistic fiction story. The paper argues that these novels are not a part of traditional environmental novels, which are usually rooted in the science fiction genre, but are a part of a new wave and budding genre of climate fiction – a genre more aligned with realistic fiction, that creates plot lines representative of climactic change and environmental damage already occurring/will continue to occur without societal change. The novels represent how the genre shows climate change as the real and “wicked” problem that it, and this paper works to apply complexity theory to the intersecting conflicts of them.

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<sup>1</sup> The anthropocene describes the “most recent geologic time period as being human-influenced, or anthropogenic, based on overwhelming global evidence that atmospheric, geologic, hydrologic, biospheric and other earth system processes are now altered by humans” (The Anthropocene | Welcome)

In her article, Adeline Johns-Putra describes how “in the last 5 years, climate change has emerged as a dominant theme in literature and, correspondingly, in literary studies. Its popularity in fiction has given rise to the term cli-fi, or climate change fiction, and speculation that this constitutes a distinctive literary genre. This prevalence of climate change literature has brought about a greater engagement with climate change in literary studies, notably the environmentally oriented branch of literary studies called ecocriticism” (1). *Flight Behavior*, by Barbara Kingslover, and *Heat & Light*, by Jennifer Haigh, are contemporary novels in this distinctive climate change fiction genre, which characteristically “interacts with a changing climate”, and provides a “shift from where attentions have been traditionally focused in literature regarding environmental destruction – post-apocalyptic, science fiction novels” (1). The climate change literature genre is different from the traditional dystopian, post-apocalyptic novels that have historically included elements of environmental disaster. Contemporary climate fiction engages with a changing climate and environmental destruction more realistically – drawing on situations and crises currently happening and appearing in society at the moment, dramatized for a fictional story.

*Flight Behavior* and *Heat & Light*, in particular, interact with changing climates through the environmental concerns of monarch migration patterns and natural gas fracking. These real-life climatic issues are the center of story and drive the plot forward by inciting a complex web of conflicts between human, natural, and religious systems. These interweaving systems and conflicts in the plots exemplify ‘complexity’ as it is described by its theory as “arising when dynamic interactions take place between a

number of independent and/or poorly understood variables” (Sun and Yang 1-2). Both novels provide a lens into a microcosm where the complex issue of climate change is manifesting. They also show climate change as a truly “wicked” problem, which, by definition, features “complex interrelationships between many social and environmental factors”. Through interweaving conflicts in human, natural, and religious systems, both authors exemplify these interrelationships between social and environmental factors.

*Flight Behavior* begins in media res with Dellarobia Turnbow hiking into her husband’s family forest to meet the man she plans on having an affair with. We learn she is in the midst of an existential crisis – she thinks she is ready and going to leave the life she has as a housewife in a small rural town by having an affair. She wants to get away from the life that she found herself in after getting pregnant her senior year of high school. On her hike up, however, she stumbles upon “something dark” that is looming “from a branch over the trail” (Kingslover 12). At first, she first thinks it is a hornet’s nest, but as she gets closer, she realizes nothing is moving. As she approaches the branches, she further realizes that “these things were all over, dangling like giant bunches of grapes from every tree she could see” (12). The sight strikes her, and it stops her before she reaches higher ground in the forest, where the man she intends to commit an affair with is waiting. She’s “pressed by the quiet elation of escape and knowing better and seeing straight through to the back of herself, in solitude”. Amongst the butterflies in the forest, “she couldn’t remember when she’d had such room for being”, and she thinks, “this was not just another fake thing in her life’s cheap chain of events, leading up to this day of sneaking around in someone’s thrown away boots. Here that ended. Unearthly beauty had

appeared to her, a vision of glory to stop her in the road. For her alone these orange boughs lifted, these long shadows became a brightness rising” (15).

Upon seeing the butterflies, Dellarobia thinks, “she could save herself. Herself and her children with their soft cheeks and milky breath who believed in what they had, even if their whole goodness and mercy was a mother distracted out of her mind. It was not too late to undo this mess...by no means was she important enough for God to conjure signs and wonders on her account. What had set her apart, briefly, was an outsize and hellish obsession. To stop a thing like that would require a burning bush, a fighting of fire with fire” (16). This beginning scene sets the foundation for the complex interaction between human, religious, and natural systems; as well as the ensuing conflicts throughout the book. Dellarobia is facing an internal, human conflict, which leads her into the natural world of the forest. The natural system, however, is disrupted by what she observes hanging from the tree – monarch cocoons. She doesn’t know what they are, though, and understands the sight to be a sign and message from God. Seeing the cocoons saves her.

From the beginning of the novel, Kingslover sets up a story where human, natural, and religious systems interact with each other. This intersection of systems shows the complexity of the unusual monarch migration.

When Dellarobia returns home later, she tells her husband, Cub, what she has seen. She then tells Cub’s parents, whom Dellarobia is not close with, but who own the forest. They are skeptical when she tells them, but Cub convinces his parents that they should all go see it first-hand. He frames the argument for pursuing the vision in the structure of religion and faith “Mother, Dad, listen here. This is a miracle. She had a

vision of this...she foretold of it. After the shearing we were up talking in the barn, and she vowed and declared we had to come up here...she said there was something big up here in our own backyard” (54). The specific diction Cub uses here – describing Dellarobia’s account of the butterflies as a ‘miracle’ and a ‘vision’ further integrates the religious systems of the story.

When they all go up to the forest, they see the sight and realize that it is butterfly cocoons on trees; Cub’s parents believe that it is a miracle as well. Cub feels so moved that he encourages Dellarobia to speak about it at church, in front of the entire congregation. She is hesitant, but eventually does; after she does, she realizes in that moment, “suddenly the butterflies belonged to Mountain Fellowship” (87).

This entire first section of the book sets a foundation for the integration of the human, natural, and religious systems that will be developed more throughout the novel; and, cause conflict to arise. The conflicts that move the plot forward are all ones that involve each of the systems interacting with each other.

In *Heat & Light*, Jennifer Haigh creates a similar first section where she introduces the ways in which the different systems intersect in the book’s world. In Bakertown, the fictional town in Pennsylvania where the novel is set, coal mining has come and gone, and the landowners in the community are economically struggling. The town, “doesn’t fascinate the world...but cyclically, periodically, its innards are of interest. Bore it, strip it, set it on fire” (11). Haigh begins the novel as energy companies are coming in with natural gas leases to propose to residents. She focuses on Bobby visiting the Devlin residence, consisting of Shelby and Rich. Then, she picks up two years later, and shows that Rich is facing the fact that signing the gas lease with Bobby Frame two

years ago was a mistake. While he had signed the contract immediately on the base of a year and half of lower mortgage payments, and by the time balloon payments kicked in, his wells would be producing and he'd have cash to spare. But, "he hadn't counted on the waiting", and he had learned that "the gas company's offer, which had seemed simple and generous, was neither" (57). Rich's balloon payments kicked in and the well was not producing or even built yet. He's late on his payments.

Rich runs into Bobby Frame, while he is back in town for only a few days, and inquires on what is holding up the well from being drilled. Bobby informs Rich that his neighbors, Rena and Susan Mackey, are delaying the process because they are refusing to sign a lease; and, the company needs to build part of the drilling system for the area on their land. Upon learning this, the "injustice [of their refusal] stuns [him]: his entire future—his kids' future—wiped out by a neighbor's whim" (75). Haigh sets up conflict here, through interacting human and natural systems.

When Rich and another neighbor, Neugebauer, confront Susan Mack – 'Mack' – she asserts that her and Rena still stand firm against signing the lease; they run an organic farm, Friend-Lea Acres, and want to keep the land clean. After this confrontation, the Mackeys become victims of several forms of harassment – from flaming shitbags on their doorstep to slashed tires. This harassment towards the Mackeys arises out of natural gas fracking leases – an environmental and climactic issue. The human and the natural systems intersect to cause conflict.

On a trip into Pittsburgh to visit one their farm's customers, a farm-to-table restaurant, Rena Mackey learns that they will not be using their farm anymore because of their neighbor's gas leases. Although Rena ensures that their land is clean, the restaurant

still drops them. Before leaving the city, Rena visits a local grocer and friend, Ronny. Ronny's friend, Lorne, happens to be visiting and he introduces him to Rena. Her first impression of him is as "her own age, lean and wiry, handsome in a long-haired way" (85). To Rena, he is one of the people she can expect herself seeing in Pittsburgh, along with the other people she saw earlier in town when she stopped by a local organic market—"a black man with extravagant braids; a Chinese mother with small twin daughters; two Muslim women in head scarves talking on cell phones" (89). She would never expect to see him in Bakerton, though, "where everyone looked more or less the same".

Lorne is a professor and community organizer against fracking; Ronny tells her about his community efforts against fracking and signing gas leases with the energy companies. After hearing Rena's concerns about her neighbors and gas leases, he tries to recruit Rena in his efforts, specifically organizing in Saxon County, where Bakerton is located, because of all the recently signed leases and yet to be signed leases. Though Rena, at this point, is adamant about keeping their farm clean, she is not quite in for organizing the town; she states, "I'm not very political" (87). After she leaves, however, she thinks about the restaurant that has just dropped them, as well as the attraction she felt towards Lorne – Rena and Susan are partners, so Rena feels uncomfortable not only being attracted to Lorne, but also just being attracted to a male.

Rena later decides that she does want to work with Lorne to fight the fracking. She was worried about calling Lorne, thinking he wouldn't remember her from the store, but he did; "they spoke by phone nearly every day, [Lorne] talking her through each step of the process [of organizing a community meeting]: reserving the room, printing the

posters, alerting the local newspaper” (205). Rena develops as a character through her community organizing actions. This role changes her and effects her relationships—namely between her and Mack. Both the organizing actions themselves and Rena’s increased interactions with Lorne creates tension in Rena and Mack’s relationship.

Mack is astonished when Rena tells her she wants to organize a community meeting over the drilling; Mack says, “you want to do what?” (205). Rena explains her perspective—as a nurse, she had seen an increase in illness amongst Bakerton residents, and even a miscarriage. However, Mack still doesn’t seem to engage in the issue. Rena experience of the drilling and its effects are internal—she is going through an internal struggle and personal change on her own. Although Rena tries to encourage Mack to come with her the night of meeting, she knows Mack won’t. She knows that this work is something she will be doing alone, without her partner. Haigh interweaves the traditional literary element of character development through personal struggle and journey with the ecological issue of natural gas fracking.

Rena’s personal journey through community organizing not only creates a wedge between her and Mack, but also brings her closer to Lorne. After the first community meeting, Lorne and Rena get dinner. They debrief on the meeting, but also begin getting more personal. Lorne asks, “Tell me about your farm. You grew up there?” (229). Rena replies, “Mack did. It’s been in their family for six generations. I’d hate to be the ones to drop the ball”. Lorne immediately asks, “Mack is your husband?”. She says ‘yes’, even though it’s a lie. The mutual attraction between her and Lorne is revealed here; Lorne follows with, “That’s too bad,” slowly smiles, and then adds, “Sorry. Did I say that out loud?”.

This is the moment where things change—“How everything can change in an instant” (229). Lorne entering into Rena’s life changes her. He is the first male Rena has been attracted to since her first abusive relationship, and since she has been with Mack. Their intimacy grows that night, as Rena opens up about her first abusive relationship and getting pregnant before finished high school to Lorne; “face-to-face with a near stranger, Rena tells a story she hasn’t told in years” (232). Rena relives and processes her past with Lorne; this is a personal moment for her, but also a moment that brings her closer to Lorne. At the end of the night as they are walking to their cars, Lorne has his hand at Rena’s back. Then, as they are about to part, Lorne notices the lightning bugs from the nearby woods. In the next moment, they are “walking hand in hand into the woods” (234).

Their relationship grows throughout the rest of the novel, and Rena’s growth as a character is interwoven with the relationship. They begin talking on the phone frequently—mostly about matters related to organizing against the fracking, but also, naturally, they get to know one another more personally too. During one of their after-midnight phone calls, Rena asks Lorne what his house looks like. She imagines him living by himself, with books everywhere. Then, she imagines if she lived alone, something she has never done; she would, “stay up late and watch movies all night and eat cold cereal breakfast, lunch, and dinner—something she can never do, because Mack has a gigantic appetite and skipping meals makes her cranky” (261). Lorne makes Rena think of and contemplate the lives she never got too live. She is not necessarily questioning her decisions, but thinking about her life more than she has before. In addition, Lorne’s voice, “warm, resonant—fills a space inside her. She doesn’t need to touch him or even see him. His voice is enough” (262).

As her and Lorne grow closer, more intimate, tension grows between her and Mack. Rena does not know that Mack had drove out looking for Rena the night of community meeting, when Mack woke up at 11pm and Rena was still not home. Mack saw Rena's car at the diner, saw Rena with Lorne inside, and then watched them walk out and into the forest together. Mack also searches Lorne on the Internet, finding link after link of Lorne at "community meetings, antifracking rallies, a fund-raiser..." (271). Mack is not passionately against the gas drilling; she, in fact, considered it could be a good thing because of the money it promised. To Mack, Rena is changing and seems to be drifting away from her.

In *Flight Behavior*, Kingslover creates a similar situation and conflict. A man arrives at the Turnbow residence several weeks after Dellarobia initially discovers the butterflies. Dellarobia perceives the man in the same way that Rena first perceives Lorne—different, an outsider and out of place. She watches "an unbelievably tall, thin man get out of the small car, unfolding himself like a contractor's ruler" (104). To Dellarobia, he is "tall, dark, and handsome, but extra tall, extra dark" (105). She is attracted to him immediately. He asks if he can go up to the forest and look at the butterflies; Dellarobia says 'yes', without asking why. When he comes back in the evening, Dellarobia invites him in for dinner. They talk about the butterflies at dinner, since Dellarobia has researched some information about them on the Internet and is curious. She tells him what she's learned about them – that they are monarchs, and that they are usually found in forests in Mexico. Dellarobia talks about the town's amazement at the arrival of them. Ovid listens, and after Dellarobia is finished speaking, he reveals that he is a scientist and is interested in studying the butterflies. Dellarobia feels

embarrassed, since she spoke so much about the butterflies when he knew all about them already. Cub is skeptical about Ovid studying the butterflies, and so are his parents, but they ultimately allow him too.

Ovid and his students set up a camper in the family's barn and use the barn's shed as their lab. Dellarobia first interacts with all of them a couple weeks after they first set up; there is a big storm and she wants to check to see how they are doing. They end up urging her to stay and chat a while, and then invite her to go up to the forest with them. This becomes the key scene where Dellarobia begins to learn about the climate science and changes Ovid and his students are studying. Dellarobia's own reflection of her own life is also incited here through her interactions with Ovid's students, whom are not much younger than she is. She thinks about how "these students had all been to Mexico...on a monarch project with Dr. Byron...[they had all] ridden airplanes, moved among foreigners, walked on the ground of other countries. [She] had been nowhere" (140). Her musings are similar to Rena's—wondering about the opportunities and lives they didn't get to live.

Up in the forest, Dellarobia works with the students to count the butterflies on the ground. They create quadrants on the ground, and they spend hours counting how many are in square, and track their sex ratio. Dellarobia doesn't ask, but wonders, why they are doing this; "were they looking at some kind of a disaster?" (141). Later, Ovid assures her that "their line of work was not just body counts", but rather, "a system, a complicated system (145). Dellarobia is stunned when Ovid and his students explain the monarch's migration patterns across North America. Ovid explains how "no one completely understood how they made these migrations. Hundreds of factors came into play" (147).

Pete, one of the students, chimes in that “they respond to cues...temperature, solar cues, it’s all they can do”. He adds, “It works perfectly until something changes...every year that we record the temperature increases, the roosting populations in Mexico move farther up the mountain slopes to find where it’s still cool and moist. But there’s only so far you can go before you run out of mountain” (147).

Dellarobia says, “and then I guess you come to this one...is that so bad? They’re beautiful” At this early point in the novel, Dellarobia does not know a lot about climate change, and she is skeptical of the little she does know. Ovid explains how “terrible things can have beauty”, and how the terrible part is that they are “very concerned”, because “monarchs have wintered in Mexico since they originated as a species, as nearly as we can tell. We don’t know exactly how long that is, but it is many thousands of years. And this year, instead of the norm, something has put them here” (148). Ovid and his students’ discussion with Dellarobia illuminates how, “it is difficult to trace or predict the ‘waves of consequences’ caused by a wicked problem, especially as such problems consist of many complex issues or roots that have become tangled together” (Sun and Yang 4).

Dellarobia thinks about what Ovid and the students have told her, and the question and conclusion they seem to be posing—why are the butterflies in the Turnbow forest, and how can they show it is related to a changing climate? She struggles to process their conversation, and she feels a little anger towards them: “she didn’t have a nice little college education”, so, “she’d just have to let the smart people figure this one out” (149). Her anger fades to sadness, though, when she thinks, “why did the one rare, spectacular thing in her life have to be a sickness of nature?”. She thinks about how the

butterflies had been hers—she discovered them. And they mattered to her, she realizes in that moment, like nothing she'd ever possessed. She decides then that she would stand against and do anything to prevent her father-in-law from logging the trees, which he has made up his mind to do in order to get the money. This climactic related phenomenon changes Dellarobia personally—she gains a new mission to learn as much as she can about the butterflies and protect them, just like Rena learns and organizes against fracking. The novels show interacting human and natural system, where degradation in the natural system is inciting change in the personal lives of the character, and contributing to character development.

Another environmental issue arising in the novel is logging. Cub's father had plans to log the forest before Dellarobia found the butterflies, and once the butterflies arrive, the conflict of whether to log or not arises. Dellarobia and Hester, Cub's mother, are against Cub's father's desire to log since they will jeopardize the butterflies. Cub is not quite for logging, but agrees with his father that the family needs money that logging would provide. This brings tension between them. While shopping, Dellarobia and Cub get into an argument; Dellarobia, angrily, asks, "so did the spirit move you to agree with your dad about cutting our mountain down to the stumps?" (164). Cub replies, "You act like we have a choice. We need the money". Similarly to *Heat and Light*, money enters the conversation of these personal decisions that affect the environment; the residents, like Rich Devlin, in Bakerton sign gas leases because they are desperate for money.

Their fight escalates, but eventually fades, and Cub asks, "How are we supposed to decide?" Dellarobia says, "I don't know. Look at the facts?" He asks what they are, and even though she is not confident in her knowledge of them, she says what she knows:

“well, for one thing, when you clear-cut a mountain it can cause a landslide. I’m not crying wolf here, Cub, it’s a fact. You can see it happening where they logged over by the Food King, there’s a river of mud sliding over the road. And that’s exactly what happened in Mexico, where the butterflies were before. They clear-cut the mountain, and a flood brought the whole thing down on top of them...” (171). Cub replies by saying, “That’s Mexico...this is here”.

A parallel moment happens in *Heat & Light*, when Rena tells Mack that she will be going to rally with Lorne in New York. Mack is surprised and asks, “why”; she could say more, like how in her eyes, Lorne is “no better than a politician, a TV preacher, the Jehovah’s Witnesses who periodically come calling” (333). Mack does not understand Rena’s organizing work or why she wants to do it. Mack says, “We live here. Our farm is here. But if people in New York want to lease their mineral rights, what does that have to do with Dr. Trexler? He doesn’t even live there” (334). Rena thinks, “he lives in the world. He cares about the world”, but she doesn’t say it. She wants to avoid conflict.

The theory of “a social mess states that no problem exists in isolation, but is influenced by other issues afflicting society. Social messes, therefore, foreground the part played by social actors, rather than by objectively identified material issues. In Ackoff’s words, ‘every [social] problem interacts with other problems and is therefore part of a set of interrelated problems, a system of problems’ (Sun and Yang 6). Both Dellarobia and Rena understand this because they are growing as people throughout the novel, and realizing more about climate and environmental destruction. The environmental issue each of them is facing in their worlds is shown as a “social mess”. Both Haigh and

Kingslover show, through the plots of their novels, the kind of problem and mess climactic and environmental change is.

These messes “have also been described as occurring when “individuals in interdependent situations face choices in which the maximization of short-term, self-interest yields outcomes leaving all participants worse off than feasible alternatives” (Sun and Yang 6). Rena and Dellarobia’s partners, Mack and Cub, show a lack of understanding that the issue they are facing in their own town is one that connects systems and places beyond them; in addition, they show the additional part of the theory when Mack thinks about signing the lease – even though she knows it will never happen with Rena, she considers it out of spite for Rena’s activism – and when Cub wants to agree with his dad on logging the forest.

In *Flight Behavior*, Dellarobia’s personal growth throughout the novel is through the interaction of the human, natural, and religious systems. A major decision that highlights these interactions is her choice to start working as a lab assistant for Ovid. After her first experience counting butterflies, and as her personal relationship grows with not only Ovid, but also his student researchers, she becomes intrigued and invested in their work. She, too, wants to make sense of the butterflies’ sudden appearance. Her belief that a changing climate has caused the butterflies’ landing in their family’s forest is not strong at the time when she is considering working for Ovid—mid way through the novel—but her consideration of working is a showing of character development.

She thinks through it with her friend, Dovey. Although Dellarobia feels as if Ovid told her about his need for lab assistants because “he was hinting [she] should apply for a job”, when Dovey encourages to her apply, she says, “Are you kidding? Check my

resume. Experienced at mashing peas and arbitrating tantrums. He'll get somebody from Cleary that's gone to college" (189). Dellarobia doesn't, exactly, believe in herself. In addition, Dellarobia is still under the constraints of her domestic life. She tells Dovey about how she told Cub, and Cub doesn't support her. He says it's because he doesn't want someone else to watch their children, but Dellarobia knows it is partly because he is concerned with what others would think and the fact that the job would pay \$13/hr—more than he makes. She is struggling with juggling her internal thoughts and beliefs—she knows that one hand, she does need to take care of the family like she always has and that she can't disturb the structure of their lives; on the other hand, this is an opportunity and she is interested. Dellarobia wants more for herself, but is caught in her the confines of her domestic life. She says to Dovey, "me with a job, Dovey. Can you picture it? Maybe I'd learn something" (191).

Dellarobia wants to learn—she wants more than her current life; her want and desperation was the original reason she went up to the mountain. During this conversation, Kingslover also reveals some of Dellarobia's past; she shows the reader Dellarobia's past and helps the reader understand how Dellarobia is in this phase of processing her life. She asks Dovey, "Do you know what today is?" It happens to be the day that Dellarobia "had that first baby. That didn't live" (192). This process of personal reflection that happens within Dellarobia is parallel to the process of personal reflection that happens within Rena, as the more she spends time with Lorne, the more she thinks about her past with men, and how she came to find Mack.

Dellarobia's pregnancy was the reason why she and Cub rushed to get married—they were both 17—which they still did even when the baby died. This choice—to get

married and commit herself to Cub and his parents, who were building them a house on the family's land—is what led her on the domestic, small town, wife life that she has had. Dellarobia never talked about this with Dovey, and it has been eleven years since it happened. They are remembering and talking now, though. Dovey says, “Listen, I’ve never said this, either. But I don’t get why you stayed” (193). Dellarobia reminds her how she was in a desperate place, with her Dad passed away and her mom dying in a hospice. She had nowhere to go.

She ultimately applies for and gets the job, without telling Cub first. When Ovid asks her “Do you prefer Mrs. or Ms. or none of the above?” while filling out her paperwork for the job, she says, “Mrs., I guess...until my husband divorces me for doing this” (216). Again, her own internal struggle between adhering to her role as a mother and wife, and wanting a different life shows through. Taking this job, though, advances Dellarobia's character development and the plot. Ovid and the students have just returned from the Holiday break, and as Ovid finishes filling out the paperwork, he tells Dellarobia that their main concern is how quickly they need to move. When Dellarobia asks why, he says, “My main worry, time-wise, is that a winter storm could arrive here tomorrow and kill every butterfly on that mountain...the temperature at which a wet monarch will freeze to death is minus four degrees centigrade...that is an inevitable event, for this latitude. The mid-twenties, Fahrenheit” (226). This is a pressing issue.

Dellarobia processes all of this information, along with the information she already knows about monarchs from her own research on the internet—monarchs do not lay eggs in the winter, and they are at risk of dying over the winter the Turnbow's forest. Ovid also emphasizes that the butterflies have been “led astray, for whatever

reason...breeding and egg-laying are still impossible for them until spring, when the milkweeds emerge” (227). Dellarobia understands, she says, “So if they die here, they die”. But, she also asks about the butterflies in Mexico and if they “are still doing okay”. Ovid tells her directly what they are finding in Mexico: “a catastrophically diminished population in the Neovolcanics,..a lot of people are there now searching the forests for relocated roosts. Higher up the mountain, is what we assumed. But the report is nothing”.

Here, Kingslover brings in the interacting religious system. Dellarobia makes a connection to the bible; she thinks, “like Job, in the bible...all his children gathered in one place for a wedding when a great wind rose and collapsed the roof upon them. All hope and future lost in a day” (228). This connection is accurate as that is exactly what could happen to the butterflies too; since so many of them are in a different place, and the different place is one where they may not be able to survive the cold, winter temperatures, all of them may die at once, in one place—the Turnbow forest.

Overwhelmed from thinking about this, she asks, “so why does it even matter what you do here?” Ovid avoids making eye contact, but says, “We are only the scientists...maybe the foolish ones. Normally it would take years to do what we are trying to accomplish here in a few weeks. We are seeing a bizarre alteration of a previously stable pattern...a continental ecosystem breaking down. Most likely, this is due to climate change. Really I can tell you I’m sure of that. Climate change has disrupted this system. For the scientific record, we want to get to the bottom of that as best we can, before events of this winter destroy a beautiful species and the chain of evidence we might use for tracking its demise” (229). While Ovid is a scientist and understands the issue, he still shows that he is also baffled, uncertain, and struggling to

process everything that climate change is and what they can do. He cannot make eye contact with Dellarobia, and even thinks that maybe, as scientists, they are “foolish” for even trying to understand a bizarre occurrence related to climate change.

The only words Dellarobia can immediately think of are, “I’m sorry”. Then, she mentions how the news media has been all over the story of the butterflies and requesting to interview her. She tells them how she keeps telling them to talk to Ovid and the other students—the scientists. He explains to her that the media doesn’t talk to scientists for a reason—they don’t want the real facts. This is another revelation for Dellarobia—another new way of seeing. She remembers how the news network dramatized her first interview describing the reason why she went up to the mountain in the first place when she saw the butterflies—how they only played a soundbyte of what she said. She eventually says to them, “I think people are scared to face up to a bad outcome. That’s just human. Like not going to the doctor when you’ve found a lump. If fight or flight is the choice, it’s way easier to fly”.

This part of the conversation between them shows “the very nature of climate change, and its inherent complexity—across not only social, economic, and political lines, but also cultural and global lines—may limit the ability to understand all the processes involved at all times, and across all sectors...(Sun and Yang 8). Neither Ovid nor Dellarobia can quite process and discuss the issue – because it is so complex. This part of the conversation shows the complexity in the natural system that Ovid describes and the way human systems interact with the breakdown of the natural system, as Dellarobia tries to reason through.

In their article, Sun and Yang state that “one of the main problems that afflicts the current regime on climate change is the disconnect between stakeholders, which include the scientific community, politicians of various countries, large corporations, small to medium-sized enterprises, industries, social activists, consumers, and the media, among others” (3). Kingslover and Haigh create worlds that show these disconnections in the real world society. By writing realistic portrayals of interactions between scientists, like Lorne and Ovid, and individuals and communities skeptical of climate change and environmental harm, the authors humanize the experience of a changing climate and environment. They tell the stories of human-caused environmental changes through the perspective of people who both cause and experience it first hand. This is the key role and advantage literature has in addressing climate change – telling the story of how the issue is not just environmental, in changing ecosystems, depletion of resources, etc., but is instead interactions between environmental and human systems.

The authors’ incorporation of religious systems, as well, shows yet another area of interaction in the complex problem of climate change. In *Flight Behavior*, Kingslover incorporates the religious systems through Dellarobia and Cub, as they both work through – in Cub’s case, resists – understanding climactic change with the religious thought ingrained in them. She also uses a pastor figure in the issue of the tree logging. Bobby Ogle, the town’s pastor, plays a large role in convincing Bear to deny the logging contract. Cub brings up that logging could affect the water and create mudslides, and Hester reminds him that he can remove himself from the contract he has already signed, return the money he’s already received, and pay off his debt through other means. Pastor Bobby reinforces their points, and when Bear still doesn’t budge, says, “What I hear you

saying is you want to log that mountain because it's yours, and because you can. And my job here I think is to warn you about the sin of pride" (403). Hester adds, "You heard Cub about the well water. If you can't live by the laws the Lord God made for this world, they'll go into effect regardless...the land was bestowed on us for a purpose".

Bear called Bobby a "treehugger", to which Bobby replies, "Well now, what are you...a tree puncher? What have you got against the Lord's trees?" This is what brings Bear to concede. Dellarobia describes how this caused the winner to be abruptly decided, like a fake wrestling match: "Suddenly Bear was defeated and Bobby was beaming, congratulatory, leading the family in prayer" (404). Kingslover shows, here, how religious systems can interact positively with human systems – in terms of human relationships – to help natural systems. The relationship between the Turnbow's and their pastor, and the religious power the pastor holds, ultimately saves the forest from being logged; which also means saving the butterflies from losing their habitat.

Haigh also uses a pastor figure in *Heat & Light*. Pastor Jess is the town pastor, succeeding the previous town pastor Wes, who was her husband. One day a worker, Marshall, from the energy company comes to her service; we learn from his perspective that he is attracted to Jess. Later, when they run into each other at the grocery store, Jess recognizes him. After exchanging formalities, Jess invites him over for a home cooked meal, which she assumes he hasn't had since he's in town only for work.

Their conversation over dinner begins with Marshall commenting that he hasn't met any community people since virtually everyone is upset with the energy companies and workers like him. Jess replies, "it's complicated, Marshall. Change is hard, especially if you didn't choose it. Most people here didn't. And the town has definitely changed..."

she adds, “A few people are making a lot of money...good for them, but everyone else is affected, too. The noise, the road construction. The other day I could swear I felt an earthquake” (129). Marshall assures her that that’s just the seismic testing they do. She’s unconvinced, though, and adds, “And what about the water supply? I’ve read about this. There are people out west who can set their tap water on fire”. He replies, “the water will be fine. Trust me. That’s a load of—propaganda...environmental nut jobs trying to scare you. Greenpeace or whoever.” Here, again, Haigh is creating a real conversation between the different groups of people within human systems that are causing and affected by environmental change. Literature shows the various perspectives of different people on issues related to environment and climate change.

Even though he says this, he thinks in his head about how he wants to say more; like, “I care about these things, too. Nobody wants to dirty up the water”. He doesn’t say this, though, just looks at Jess and says, “You don’t believe me”. Marshall’s added thought of not wanting to dirty up the water either humanizes him further – moving him past the stereotypes perpetuated in society of corporate energy workers who do not care about people.

Jess does not believe him, but does not say so outright. Instead, she says, “It doesn’t matter what I think. I don’t have enough land for anyone to drill here. But if I did? No way would I sign a lease”. They continue to discuss the issue and the other issues residents have with the energy companies coming in—the fact that the energy companies bring in their own workers, like Marshall, and do not actually create jobs for the people in the town. This, again, shows how a real issue manifests for people in a town with a dying economy – while companies say they create jobs, they do not always do because they

bring their own workers. Haigh presents a realistic example of this through the fictional town of Bakerton.

Eventually, their conversation becomes more personal when Marshall asks about Jess's dead husband, Pastor Wes, who we learn earlier on in the book, died from cancer that was potentially linked to the nuclear powerplant that was in Bakerton in the 1980s – another issue that involves environmental and human systems interacting. Jess reveals this to Marshall when he asks, even though she's never openly talked about it to anyone before. She feels comforted by him though, and although Haigh does not describe how their physical intimacy, in addition to emotional intimacy grows, in this moment, we know that “later [Marshall] will try to reconstruct exactly how it happened. He must have taken the platter from her hands before he took her in his arms”. The relationships within the human system are working here, and they are interacting with the natural and religious systems as Jess is a figure for the religious system and Marshall is a figure for the natural system, threatening the sustainability of it as a worker for a fossil fuel company. Haigh shows the experience of climate change at the community level, which is complex because of the interactions between all three systems.

As Pastor Jess begins seeing Marshall more, her attention changes in other aspects, especially in the case of Shelby Devlin, who relies a lot on the pastor and church: “when Pastor Jess rises to give the lesson, Shelby leans forward in her seat...” and, she believes that when Pastor Jess “speaks to the congregation...she noticed everything about you: whether you're peaceful or troubled; if you got a good night's sleep or sat up half the night with a sick child; if your husband made love to you or fell asleep on the couch. Whichever happens to be true, she looks at you with compassion and deep understanding,

as though grace is something you actually deserve” (67). Jess is big part of Shelby Devlin’s life, and Jess counsels Shelby on all of her worries about the kids and problems with Rich. As Shelby perceives her child, Olivia, getting sick from what she believes to be contaminated drinking water from the fracking, she tells Pastor Jess. Shelby and Jess’s relationship adds another layer to the interactions between human, natural, and religious systems in the book. Jess is the religious and human support for Shelby, yet she is also involved with Marshall, an emblem of the “enemy” for Shelby – the big energy company Shelby, and other residents, believe is contaminating the water.

One night Jess forgets about Shelby’s counseling session. Shelby arrives and finds the door unlocked, so she walks in. Pastor Jess is not there, though, and only arrives later, with Marshall, who Shelby has never met. Surprised to see Shelby at first, Pastor Jess realizes that they had an appointment and apologizes. She then introduces Marshall: “this is my friend Marshall”. She introduces Shelby to Marshall: “This is Shelby Devlin, from the church” (331). Marshall knows the name because he works on the drilling the well— “Devlin...you live out Number Nine Road? That’s my crew that’s drilling your well”. Here, Shelby feels a deep sense of betrayal and anger. She thinks, “that contaminated water...that poisoned my daughter. Pastor Jess is consorting with the enemy, the worst kind of treason”. Shelby is in disbelief when Pastor Jess says that it is too late to have a session, and that they will have to wait until next week. While this was not something Jess would have done before, she does because being with Marshall has changed her and her priorities. This causes disruption between the systems, further showing the complexity of the strings that connect them.

By the end of each novel, both Rena and Dellarobia have grown as individual characters out of the various interactions of the three systems that create situations and conflicts in their lives. Rena does not end up leaving Mack for Lorne. She realizes “if they’d met when they were younger, in a different time and place”, maybe they would have worked out and her life would be different. But, “too much time has passed, too many choices with consequences that led to more consequences that led to more consequences, her path spiraling off in a direction no one could have predicted. Impossible, now to rewind it; to picture those other lives she might have lived” (415). While earlier in the novel, Rena wondered about the other lives she could have lived—arguably wished she could have live—by the end of the novel, she has grown to understand the path of her past and accept it. Even more, she realizes that “if she left Mack, she’d have nothing, but this isn’t why she stays” (416). She stays because she loves Mack, and she knows that “a lifetime ago, when Rena was in danger, only Mack had come to her rescue”, and now, “Mack’s bravery makes her stronger” (417). The town is also successful in moving the energy company out, and Rena is proud and happy that they can still operate their farm organically. The worry for the damage already down to the town is still present, though, the human-altered natural environment may continue to after the human system of the neighborhood into the future.

In *Flight Behavior*, Dellarobia decides to separate from Cub. This decision is revealed as she is explaining it to Preston, their young son. She explains it very directly, telling him how her and Cub got married by accident. When he asks why, she says, “people do wrong things all the time, Preston... there’s some kind of juice in our brains that makes us only care about what’s in front of us right this minute. Even if we know

something different will happen later and we should think about that too” (428). She adds, “You and Cordie [his baby sister] are going to grow up in some deep crap, let me tell you. You won’t even get a choice. You’ll have to be different.”

This conversation not only shows that Dellarobia has grown through the novel to the point where she can separate from Cub and change the course of her life, but also shows, subtly, how Dellarobia’s perspective of their own personal life—with all of its mistakes and unexpected changes—has developed in part because of her understanding of how the world changes; more specifically, how the climate changes. Her explanation to Preston of why and how her and Cub are separating could also be used to explain why the climate is changing too. It’s all about change. Preston asks, “What if I want everything to stay how it is?” (429). Dellarobia replies, “Oh man. That’s the bite. Grown-ups want that too. Honestly? That’s what makes them crap the bed and stay in it. I’m not even kidding”. This is a way that Dellarobia and anyone could also make sense of climate change—that humans have crapped the bed and now have to live in the consequences. The human and natural systems intersect.

The intersection and interaction between systems in both *Flight Behavior* and *Heat & Light* is what illuminates the complexity of environmental and climate issues. The novels make up the emerging genre of climate change literature—differing from the more traditional role science fiction, post-apocalyptic literature—which plays a crucial role in the environmental movement since they tell narratives that show the complexity of real, contemporary environmental issues. *Flight Behavior* and *Heat and Light* both examine pressing environmental issues that are commonly partisan issues in real society;

however, these novels show the experiences, in a realistic way, of the impacts and affects between the human and natural worlds.

Climate fiction's power is its ability to center and call attention to the 'wicked problem' of climate change. In addition, it shows the complexity of the issue, with many different social and environmental systems interacting to perpetuate and solve it. Its place is reminding human beings how environmental issues are human issues – not issues way out there, affecting just the planet. All the issues are intertwined and connected.

. Literature is a place where individuals' perspectives are affirmed, challenged, and broadened – thus, it has a crucial and critical role in the environmental movement. Centering human narratives through literature provides important perspectives and connections to how the human systems interact with natural ones. This is the key connection that shows the complexity of the climate change related issues, which aids in conceptualizing the scope of the issues and the solutions that must be created to solve them; solutions that are equally as complex and involve connections between human and environmental systems as well. Literature that tells stories of human experiences of climactic change is, ultimately, one part of the complex solution that will move society forward in addressing the wicked problem of climate change.

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