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M.L. Herring. *Born of Fire and Rain: Journey into a Pacific Coastal Forest*

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.L. Herring's *Born of Fire and Rain* is a guided journey into the Pacific temperate forest. It is a kind of field trip in which the reader is directly asked to imagine themselves searching through the trees' branches and digging into the soil, questioning the lives and histories of the many organisms they encounter. A set of illustrations scattered throughout the work – drawn by Herring herself – supports these imaginative exercises, visualising parts of the ecosystem from the Juvenile coho salmon (p. 183) in a stream to the chanterelle mushrooms co-habituating with millipedes and beetles (p. 81). Meanwhile, Herring's continual use of the second person voice is a clear indicator of the book's instructive nature. She has crafted an invitation in which you, the reader, are continually called on to pay attention to the precarious and changing nature of this corner of the earth and to consider its uncertain future.

Having accepted this invitation, the reader is guided through the ancient history of the trees, into the soil of the forest's underworld, up to the tops of the canopies and down to wade through the complex water systems of the High Cascades Mountain range. In each chapter,

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Herring is insistent on placing the reader in situ. For example, in chapter two, 'you enter a land of big, old trees', while in chapters six and eight, 'you explore the forest underworld' and 'you float down the watershed'. At times, the pace of Herring's prose is almost dizzyingly fast. For example, in chapter two, she rapidly introduces her readers to a range of giant trees – the Sitka spruce, the redcedar, the Douglas fir and so on – at first hardly pausing to describe these magnificent species. But perhaps the rapid pace is part of the point. The forest can be a confusing place to enter at first, kind of 'kaleidoscope' (p. 9). Guidance and patience are needed.

And so, Herring slows down and begins to investigate the properties of such trees as well as their relationships with one another. An illustration of the Western Hemlock reveals the ways in which needles of different lengths point in all directions, while the accompanying description reveals how its seedlings take root on fallen logs or on mossy stumps. Next, Herring returns to the Pacific yew. Like the Western Hemlock, she explains, it grows slowly, but an illustration of the tree's pine needles and seeds also communicates the contrasts between them. And, in case a reader is struggling to comprehend the enormity of these trees – though Herring never shys away from emphasising their huge trunks and sprawling branches – illustrations of a small humans peeking out from behind the bottom of a large cedar or Douglas fir are potent reminders of the forest's scales. *Born of Fire and Rain* is not meant to be an ecology textbook, but these illustrations and descriptions are useful guides for activating a reader's environmental understanding and awareness.

Herring demands that that the reader closely attend to the forest's various features using all their senses. 'Your eyes might distinguish more than a million different colors', Herring notes as she guides the reader 'to the top of the canopy' in chapter seven. But 'your nose can distinguish more than a trillion different scents. Here in the forest, you breathe air perfumed with volatile hydrocarbons…lemony limonene and turpentine scented pinenes.' (p. 99) Here, the strength of Herring's writing comes to the forefront as she weaves together precise descriptions of scents such as the pineapple-like aromas emitted from the western Red Cedar together with a lucid explanation of their chemistry. Taking perception as a starting point, Herring guides the reader into reflecting on the how and why of this sensory experience. She does not let the reader

simply accept that there is a mineral scent in the atmosphere after rain, but instead explores the way in which the humidity in the atmosphere prompts the bacteria *Streptomyces* to produce a biochemical called geosmin. Rain then helps to distribute geosmin molecules alongside other plant volatiles to create that heavy post-rain smell. And, before one criticises Herring for being too human-centred, she notes that these geosmin molecules serve another purpose: to attract springtails to disperse *Streptomyces* spores. In this small detail, Herring provides a further insight into the systems behind the sights and smells of the forest.

Yet, ultimately, perhaps one of the greatest strengths in *Born of Fire and Rain* is Herring's historical and contemporary exploration of humans' complex relationships with the Pacific temperate forest. 'People have made their homes here, in the verdant space between volcano and ocean, for at least twelve thousand years' (pp. 160–61), Herring reminds us. And their long residency has impacted the landscapes. For thousands of years, fire has been used to clear undergrowth for deer hunting and fostering hazel. In the rivers, Pacific salmon were gathered up meals and trade as indigenous communities made use of their rich surroundings. But, according to Herring's history of the forest, a profound shift took place in the early modern period and the first contact with Europeans.

As Herring explores in chapter ten, 'You Find Human Fingerprints', before Europeans could even make their mark on the trees and rivers, they transported a myriad of diseases that profoundly threatened indigenous populations. From the 1700s, European explorers noticed the valuable timber of trees such as Douglas fir – a tree with which, by this point in the book, the reader has become intimately familiar. Logging would soon become a key industry in the region and, as Herring clearly demonstrates, its history is intimately interwoven with that of the story of the region's increasingly troubling wildfires. Fallen branches and smaller trees could easily catch fire from the cinders spewed by coal powered locomotives. Since the 1800s, efforts to manage such fires have highlighted the discrepancies between different knowledge systems and authorities. Indeed, Herring's discussion of wildfires is part of the book's broader concern with misunderstandings whereby the public's fears of wildfires and extreme weather patterns have been exploited by the logging industries and policymakers. So, Herring does not shy away from tracing the changes in environmental protection laws and policies. 'You, as part of the American public, own 60 per cent of Oregon's land and

42% of Washington's', she reminds us (p. 11). 'Understanding how complex natural systems *actually* work is essential' but, as her book shows, comprehending how policy and knowledge systems work is important too (p. 12).

Although much of *Born of Fire and Rain* is a detailed exploration of the forest's ecology, it would be wrong to overlook its autobiographical qualities. Herring is an ecologist and science writer living in Oregon. She is, as she acknowledges several times, intellectually born out of environmental movements of the 1960s and 1970s. The influence of Rachel Carson's efforts to warn the public about the harms of pesticides and environmental disinformation in *Silent Spring* is clear. However, in the final chapter of the book, Herring reflects more explicitly on her intellectual journey as an ecology student working under the instruction of Bill Odum. Recounting how she first moved to Oregon in the 1970s as part of a 'wave of young professionals looking for an ecological life', Herring recounts her experiences with the institutions discussed in the book such as the Oregon Department of Fish and Wildlife (p. 212) The intellectual journey is also, of course, ultimately intertwined with a personal journey. She was, after all, seeking an 'ecological life', not just ecological work.

Herring lives in a house built, '*in* and *of* the Douglas-fir Forest' (p. 8). Thus, the environments evoked and explored in her book are not only field sites, but her home. 'This is where I have spent most of my life', she acknowledges, 'writing about the landscape and the people who pursue its mysteries'. (p. 8) The book is riddled with anecdotes of her experiences of the landscape's precarity and challenges. In chapter nine, Herring vividly recounts her experience of a fire in Lake Waldo in which she and her family had to flee from the dense smoke that ravaged 10,000 acres of trees and understorey. But, as she reminds us, despite her own emotions during the incident, 'this is not a dramatic wildfire incident'. (p. 140)

Herring's personal anecdotes highlight how place-centred *Born of Fire and Rain* is. On the growing bookshelf of environmental literature, alongside recent works such as *The Light Eaters, Entangled Life, Otherlands,* and *Is a River Alive?*, to name just a handful, *Born of Fire and Rain* offers an in-depth guide not to trees or rivers or fungi around the world, but to an ecosystem in a particular place. Her care for the landscape seeps through every page. And, in this care, Herring builds

towards a broader argument and demand from the reader: to pay attention to environments, not just those of the Pacific temperate forest, but of anywhere around you. The book is a testament to the value of sustained, in-depth study of place and space in which we acknowledge our relationship with ever-shifting landscapes and ecosystems. It is possible to criticise Herring for failing to give much concrete practical advice about how to confront the climate crisis, but the work is ultimately a lyrically hopeful testament to the importance of education and communication in helping to construct a more sustainable local and global environment.

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