NO UTOPIA IS AN ISLAND: THE ECOSYSTEM OF UTOPIAS

IN PAUL MCAULEY'S QUIET WAR SAGA

by

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ABSTRACT

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In this thesis, I argue that a new, ambitious variety of literary utopia, which I call an ecosystem utopia, has developed over the past forty years, chiefly in science fiction and fantasy. My primary examples are Paul McAuley's *The Quiet War* and *Gardens of the Sun*. An ecosystem utopia portrays a dynamic network of societies in a text's fictional time and space. Like a traditional utopia, it explores the structure and functioning of individual utopias, and like the critical utopia, their flaws and ambiguities. Sociopolitically complex, it explores threads of influence, alliance, conflict, exploitation, and dominance within and between multiple societies. To analyze such a complex system, I have created a hybrid methodology, econet criticism, which blends ecology with a variant of Actor-Network Theory to analyze individual utopias and trace their interactions. This is an exploratory work, a first step toward developing a new way of conceiving and analyzing utopia.

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INTRODUCTION

"No man is an island, entire of itself; every man is a piece of the continent . . ."

John Donne, 1624, Meditation XVII

The island, isolated and protected by ocean, is a widespread trope in utopian literature. What better place to establish a new, more perfect society, free of (or at least resistant to) corruption and interference from the rest of the world? Island utopias include Sir Thomas More's Utopia (1516), Johann Andreae's Christianopolis (1619), Tommaso Campanella's island of Taprobane (from *City of the Sun*, 1623), Sir Francis Bacon's Atlantis (1624), and William Dean Howells' Altruria (1894). In the twentieth century, we have Austin Wright's appropriately named Islandia (1942) and Aldous Huxley's island of Pala (*Island*, 1962). Many other utopias, while not on actual islands, are nevertheless hidden away from the world, such as Margaret Cavendish's Blazing World (1666), Mary Lane's Mizora (1881), Voltaire's El Dorado (*Candide*, 1759), Charlotte Gilman's Herland (1915), James Hilton's Shangri-La (*Lost Horizon*, 1933), and Brian Aldiss's Mars (*White Mars*, 2000). These island paradises are usually "blueprint," or prescriptive, utopias that, once established, seek to resist unwanted outside influence. As Sarah Hogan points out, however, the utopian island is not always completely cut off from the rest of society. She writes, "While the early modern utopia is almost always circumscribed to an island territory, these intentionally isolated societies simultaneously engage in expansionist agendas that willingly violate their own carefully demarcated boundaries" (32). Such colonial or evangelistic utopias are essentially "laborator[ies] for future replications of utopian society and law – an island totality with an agenda for the larger totality" (32).

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The island utopia's border, whether it is the original utopia or a colony, is intended to be permeable in only one direction: out. After all, the purpose of isolating a utopia is to prevent contamination of its blueprint. This move presumes, however, that contamination from without can indeed be prevented. It also potentially fails to account for dissension from within. This is why people of the twentieth century became so skeptical of utopia: they watched several blueprint utopias translate into notoriously genocidal, totalitarian regimes. This widespread disaffection propelled the anti-utopia to dominance in the twentieth century. Even now, many Westerners equate utopia with tyranny, as evidenced in works such as political commentator Mark Levin's recent book *Ameritopia: The Unmaking of America*. The pursuit of perfection is now seen by many as a dangerous, take-no-prisoners enterprise.

Nevertheless, the utopian impulse is too strong to be forever subsumed in cynicism. Post-WWII utopists increasingly produced dynamic and ambiguous utopias that incorporated meditations on what obstacles may arise in the utopian adventure and how they might be overcome. Unlike the typical blueprint utopia, these ambiguous utopias admit the inevitability of problems and work toward utopian principles that can accommodate the complexities of the real world.

1.1 Description of Thesis

In this thesis, I argue that a new, ambitious variety of literary utopia, which I call an ecosystem utopia, has developed over the past forty years, chiefly in science fiction and fantasy. An ecosystem utopia portrays a dynamic network of societies in a text's fictional time and space. Like a traditional utopia, it explores the structure and functioning of individual utopias, and like the critical utopia, their flaws and ambiguities. Sociopolitically complex, an ecosystem utopia explores threads of influence, alliance, conflict, exploitation, and dominance within and between multiple societies. This model resists the Cartesian nature/culture dichotomy, in that human activity and social systems are treated as integral parts of the biosphere.

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The novels I will use to illuminate the ecosystem model are *The Quiet War* (2009) and its sequel *Gardens of the Sun* (2010) by British botanist and science fiction author Paul McAuley. I hope that the following brief overview of the novels will help to acquaint readers unfamiliar with McAuley's work. Further guidance can be found in the chapter and subheading titles for Part Three and in the appendices.

In these books, the people of Earth are struggling to recover from the Overturn, a series of catastrophic environmental changes attributed to global warming, overpopulation, and industrial pollution. Collapsing nation-states leave a power vacuum that is quickly exploited by opportunists of all kinds, particularly the criminal variety. These new power brokers take control of territory after territory until the world is divided into three megastates: the European Union; the Pacific Community; and Greater Brazil, which comprises the old North, Central and South Americas. Desperate to repair the planet's damage, the survivors create a new religion, a hybrid between Christianity and Gaia worship that implements a radical green agenda worldwide. Although their purported goal is to create a preindustrial, Edenic eutopia, the totalitarian structures they establish to facilitate this outcome create a dystopia for the masses.

Not all survivors stick it out on Earth, however. Many scientists and wealthy citizens take refuge first on the Moon and Mars, then later on the moons of the outer solar system, earning them the nickname "Outers." Although most Outer habitats have important commonalities, such as direct democracy and free flow of information, they do not constitute a unified society: each habitat is autonomous and has its own variety of utopia. Whereas the people of Earth, in their narrow focus on restoring the planet, have allowed much of their science to stagnate or be lost entirely, the Outers have developed innovative genetic and ecological technologies that enable them to adapt to and flourish in their harsh environments. The "quiet war" is orchestrated by militant factions within the Earth's three major powers who intend to seize and exploit Outer technology. They gain popular support by fomenting prejudice

against the posthuman[1] Outers on the premise that the way they have altered their DNA is a dangerous offense against God and Gaia.

Earth's militaries easily defeat the Outers and establish the Three Powers Authority (TPA) to administer the Jupiter and Saturn systems. For years, this bureaucracy bloats ever larger, plundering the Outers' scientific archives for profit and violating all of the Outers' cherished democratic rights. Eventually, however, the financial and political strain back home takes its toll: a revolution in Greater Brazil shifts the balance of power. When the Ghosts, a group of renegade Outers, sends attack ships to the Saturn System, the Pacific Community and the Free Outers initiate system-wide détente so that the erstwhile enemies can band together in defense. They break the Ghost offense and establish a new era of peace in the Solar system. In the run-up, prosecution, and aftermath of the war, McAuley explores the causes and effects of shifting power relations in context of the overall biosphere.

Since no analysis of these novels has yet been published, I will primarily examine them in context of relevant critical and theoretical scholarship. I will treat McAuley's utopias, as Eric Wolf writes, not as "isolated and distinctive" entities but as "nodes in a network of relations," whose boundaries are "shifting and evanescent" (Wolf xii). To that end, I will employ a variant of Actor-Network Theory to describe individual utopias and trace their interactions. Using these descriptions, I will draw conclusions about McAuley's utopianism. I will end by speculating on further scholarly development of the ecosystem model, as well as the implications of my research for utopian studies. This is an exploratory work in that I outline a new way of conceiving and analyzing utopia; an exhaustively-developed new methodology is beyond the scope of this thesis.

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[1] A note on terminology: "posthuman" can refer to one of several things, including the critical theory that resists the anthropocentric assumptions of humanism. In this context, however, McAuley (and therefore I) use it to refer to the collection of ideologies, technologies, and speculation related to transhumanism (see, for example, Bostrom). McAuley uses the term "posthuman" in most instances, but he uses "transhuman" to evoke the most radical posthuman ideologies, particularly related to the Ghosts, who aspire to drive human evolution in a thousand different directions. I will follow his example in usage.

1.2.1 Definition

Defining the literary utopia is tricky because a) literary utopias are extremely diverse and b) scholars have many critical lenses through which to peer at them. Definitions range from the simple (Claeys and Sargent) to the complex (Roemer). Each is potentially useful, depending on one's critical approach (Vieira 1). However, as the utopian genre evolves further away from the traditional blueprint utopia and toward more realistic, flawed, dynamic societies, the term "utopia" becomes increasingly problematic; as Fredric Jameson writes, any definition tends to exclude too much (1).

In an effort to be inclusive and yet still paint boundaries around my subject, I have chosen to define "utopia" in what may prove to be a controversially broad fashion; nevertheless, I believe it is supported by scholarship and, to some extent, general scholarly usage. Most importantly, I believe it to be the most accurate and useful definition for analyzing an ecosystem of utopias, most or all of which are ambiguous in nature. I propose using "utopia" as a generic term that refers to a fictional society, community, or joint enterprise that is founded upon or that operates with eutopian *intent*. This definition is evaluative only of the eutopian intent[2] (not necessarily altruistic) of the utopia's driving actor(s), to be carefully distinguished from eutopian *outcomes* as judged by the author and the reader; therefore, one may refer to Orwell's Oceania generically as a utopia and evaluatively as a dystopia. I find support for this approach in Lyman Tower Sargent's definitions in both of his "Three Faces" articles and in his introduction (with Gregory Claeys) to *The Utopia Reader*; specifically, he separates the term "utopia" from the evaluative terms "eutopia" and "dystopia," as follows:

> Utopia -- a non-existent society described in considerable detail and normally located in time and space.

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[2] I use "eutopian intent" here as opposed to "utopian desire" (as defined by Ruth Levitas in *The Concept of Utopia*, 1990) because "desire" alone is potentially passive, whereas "intent" implies a desire that motivates action while not necessarily implying success.

Eutopia or positive utopia -- a non-existent society described in considerable detail and normally located in time and space *that the author intended* a contemporaneous reader to view as considerably *better than* the society in which that reader lived.

Dystopia or negative utopia -- a non-existent society described in considerable detail and normally located in time and space *that the author intended* a contemporaneous reader to view as considerably *worse than* the society in which that reader lived. (Sargent 9, emphasis added)

The fact that Sargent and Claeys use separate terms to delineate the goodness or badness of the non-existent society indicates that the term "utopia" by itself does not constitute such a judgment. As Sargent points out earlier in the same article, even if an observer were to make a definitive judgment on a particular topos at a particular time, that is not to say that other observers, particularly in other time periods, would concur. For example, a sixteenth-century eutopia might be a dystopia to denizens of the twenty-first (5). Thus, since reactions to the *outcome* of a utopian enterprise are variable, and the founding *intentions* of the driving actors are less so (though still sometimes slippery), it is necessary to have a term that temporarily defers the observer's judgment and is descriptive, as objectively as possible, merely of the eutopian intent. "Utopia" is not thereby conflated with the more-general "community" or "society," for, as Sargent points out, mere tribalism or ad hoc communities do not necessarily involve eutopian intent and do not qualify as utopias (5, 15). The characteristic that separates the utopia from the society-in-general is what Fátima Vieira calls "a matter of attitude," an "aspiration to overcome all difficulties by the imagination of possible alternatives" (1). The success or failure of this attitude to produce eutopian outcomes does not influence the generic designation of a "utopia," but it does influence the *evaluation* of that utopia as a eutopia, utopian satire, etc.

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Before I go on to classification schemes for the literary utopia, I want to make explicit my philosophical stance in relation to Sargent's "three faces" of utopianism. As with definitions of utopia, one's relationship to the three faces depends on the scholarly context. Because Sargent's goal was, in part, to sort out a morass of fuzzy, conflicting uses of the term "utopia," it was important for him to separate the literary utopia from the intentional community from the social theory so that each could be clearly defined and analyzed (2-3). I intend, however, to treat the three faces as interrelated manifestations of utopianism. The "faces" engage dialogically, not just with each other, but indeed with human behavior at large, so that, as Sargent maintains, utopian hope, or "social dreaming," penetrates all strata of human society (3-4, 9). As I analyze the various utopias (generically speaking) in McAuley's work, I will treat each not only as a literary utopia but as an intentional community[3] and as the implementation of certain social theories. The intentional community face will be particularly important regarding what I refer to as *utopian enterprises* and *utopian nexuses*. These models correspond roughly to Caroline Edwards' "microtopia," which traces its lineage back to Ernst Bloch's utopian notion of "small scale happiness" (qtd. in Edwards 764). The enterprise and the nexus are very similar to one another, both incorporating something less than or prior to a full-blown utopian society; however, "enterprise" implies some level of planned, coordinated action, such as a yearly conference, whereas "nexus" implies something much more loosely organized, if organized at all. The utopian nexus is like an eddy of utopian activity, a serendipitous coincidence in which people moved by a similar utopian impulse briefly cooperate, as in a spontaneous protest. As analysis proceeds down to this level, the integration of Sargent's three faces becomes nearly seamless, similar in nature to a nebula in space that eventually gives birth to discrete celestial

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[3] Although the term "intentional community" specifically designates a real-life utopian community, as opposed to a literary utopia, it carries with it a sense of experimentation with utopian ideals on a small scale, which I think resides close to a very blurry border with the literary utopian enterprise or utopian nexus.

bodies. On occasion, to streamline syntax, I will use "utopian enterprise" to refer to any activity that is utopian in nature.

1.2.2 Classification

As with definitions, scholars have proposed many systems by which to classify types of literary utopias. For example, Claeys and Sargent group utopias by era of historical correlation, such as the Age of Exploration that inspired fictional travel narratives in which primitive utopias are discovered like so many New Worlds (3ff). By contrast, Raymond Williams places utopias on a continuum that measures human agency, from none (the deity-conferred paradise) to complete (technotopia) (203).

My classification system is closest in nature to the one Tom Moylan describes in his book *Demand the Impossible*. In order to demonstrate where our systems overlap and diverge, I will explain them side-by-side. In all categories below, I use "utopia" in the generic sense:

Moylan's systematic utopia purports, sincerely or ironically, to be a totalizing system, a blueprint for the perfect society, impervious to the passage of time or the influence of the outside world. Like Fátima Vieira, I call this a static utopia (9). *A Traveler from Altruria* by William Dean Howells is a good example.

Moylan's heuristic utopia is founded upon the notion that even the most carefully designed society will encounter problems and therefore requires in-built mechanisms that ensure changes are made in accordance with the utopia's values. Although his critical utopia sometimes incorporates change mechanisms as well, the heuristic utopia has an aura of unflagging optimism and belief in the eventual perfectibility of society, which the critical utopia lacks. The critical utopia is not necessarily anti-utopian, in Sargent's terms, but it will sometimes question utopianism itself; this doubt does not manifest in the heuristic utopia. In the text of the heuristic utopia, the utopia is definitely considered the best alternative currently in existence, even though it may still be in the process of perfecting itself. This is one type of dynamic utopia, according to my system. *Walden Two* by B. F. Skinner is a good example of both the heuristic

and the dynamic utopia. Anarres in Ursula Le Guin's *The Dispossessed* is dynamic without being heuristic.

In both the systematic and heuristic utopias, the narrative usually follows the "visitor/tour guide" model. Description of the society dominates; plot and characterization are minimal. These characteristics are not always present in my static and dynamic categories.

Moylan's critical (or ambiguous) utopia splits the focus between the critical utopia and the originary society, or between two or more ambiguous utopias. Plot and characterization are much better developed. Pros and cons of all involved societies are explored in detail. The author or point-of-view character may display a preference for one of the utopias, but it is a conflicted allegiance at best, or allegiance "warts and all": the novel may end with the protagonist hoping for the erstwhile-utopia's rehabilitation, as with Shevek and his homeworld Anarres in *The Dispossessed*.

This is where my classification system diverges. Whereas Moylan's system posits a continuum of utopias from closed/totalizing to open/ambiguous, my system focuses on the degree of change and number of utopias. It comprises two primary categories and several subcategories:

I. Degree of change

    A. The static utopia is impervious or resistant to change. This does not imply that the utopia does not *need* to change, only that it does not do so.

    B. The dynamic utopia changes to a greater or lesser extent. The change may be carefully managed by the inhabitants as a result of in-built mechanisms, such as the process of amending the U.S. Constitution. Alternatively, ad hoc and possibly deleterious changes may be made in response to pressures from within or without the utopia.

II. Number of utopias

    A. In the standalone utopia, a single utopia is described in detail. Although other societies may be portrayed and may even compete for resources or dominance, such plot

elements merely serve as props to illuminate the workings and ethical status of the utopia; these other societies are not significant in and of themselves. Thomas More's *Utopia*, Edward Bellamy's *Looking Backward*, and Ernest Callenbach's *Ecotopia* are good examples. George Orwell's anti-utopian *Nineteen Eighty-Four* and Samuel Butler's satirical *Erewhon* also qualify.

B. In the competing utopias model, two or three detailed, ambiguous utopias (others may be very briefly described) compete for resources, influence, the reader's sympathy/allegiance, the protagonist's sympathy/allegiance, and so forth. *The Dispossessed* by Ursula Le Guin, *Salt* by Adam Roberts, and the Saga of Recluce by L.E. Modesitt, Jr., are good examples.

C. The ecosystem utopia, introduced above, expands on the competing utopias model. A text using this model will portray numerous (perhaps five or more) societies explicitly or implicitly identified as utopias, many or all of which are described in detail and interact with one another. The ecosystem utopia offers a global view of how physical environment and access to resources affect social structure, how societies interact with one another, how they are affected by historical events and trends, and how individual societies and the entire biosphere navigate change. Although the author may display a preference for one or more societies above others, she or he portrays all of them as having both eutopian and dystopian tendencies. The key to this model lies in the dynamic *networks*, small and large, provisional and established, tenuous and resilient, within an individual society and across the entire biosphere. *The Quiet War* and *Gardens of the Sun* by Paul McAuley constitute the paradigm for this model. Bruce Sterling's Shaper/Mechanist stories are also a good example, as are Cordwainer Smith's Instrumentality stories.

1.3 Ecosystems and the Environment

It is important to stipulate how "ecosystem" and "environment" are being used in this context. As with "utopia," these words mean many things to many people. Wikipedia, for example, defines an ecosystem as "a biological environment consisting of all the organisms living in a particular area, as well as all the nonliving (abiotic), physical components of the environment with which the organisms interact, such as air, soil, water and sunlight" ("Ecosystem"). That definition is consistent with general scientific usage and public perception of the term, but in my opinion, it is restrictive to the point of being inaccurate. Specifically, the prefix "eco-" implies an exclusive connection with ecology and the related "hard" sciences. In the literary realm, Lawrence Buell makes a similar objection to the term "ecocriticism" as opposed to "environmental criticism": it focuses too narrowly on the science of the "'natural' *rather than* the 'built' environment," thus reinforcing the Modernist nature/culture dichotomy (Buell 12, emphasis in original). This dichotomy has significant consequences beyond the philosophical. At one extreme, explorers and developers in the Age of Discovery and the Industrial Revolution tended to view humans as having God-given dominion over Nature and sometimes interpreted that power to mean that Nature was a giant pantry from which they could take what they liked. This attitude often had catastrophic effects upon ecosystems and human living conditions, as with the pollution of the Thames River in the 19th century and the American Dust Bowl of the 1930s. At the other extreme are several varieties of radical environmentalists, who tend to view humankind as destructive interlopers in an otherwise natural, harmonious, balanced system. Some favor ecological solutions that rigorously curtail human lifestyles, including reproductive activity. Although strict population control measures have not yet been undertaken by governments inspired by biocentrism, it is instructive to examine the consequences of such an approach where it has been tried, albeit for different philosophical reasons: in China. The consequences of China's "one child" policy are grim: forced abortions, voluntary abortions of female fetuses, a growing demographic imbalance between males and

females, and a concomitant rise in the sex slavery trade. Neither extreme, the human master nor the human interloper, recognizes humans as natural, integral members of their respective environments.

According to Sharon Kingsland, however, Arthur Tansley, who coined the term "ecosystem" in 1935, always envisioned humans as "intrinsic parts of the system," not outside or above it (185). He intended the term "to express the totality of that system, embracing organisms and physical environments, and to acknowledge that exchanges were occurring between the physical and the biological components" (184). Nobody would dispute that these "exchanges" include beavers making dams, termites building mounds, cows expelling methane, and volcanoes erupting. The exchanges that involve humans and which have long been associated with "culture" (meaning "not nature"), such as mining, building roads, synthesizing chemicals, and writing poetry, if anything constitute differences in scale but *not* differences in essence; in other words, those human activities which we habitually classify as "culture" or "civilization" do not occupy some plane foreign to "nature." This is not to say that there is no difference between humans writing poetry and beavers making dams; however, since both activities require skill, judgment, and volition, they are more similar to each other than the beaver is to snowfall in the Alps. The Modernist, on the other hand, would call the poetry "culture" and the beaver and snowfall "nature," rejecting any notion of similarity or overlap between the human and the animal. This is precisely the point of view that postmodern ecology has attempted to controvert (Garrard 172).

If we take Tansley's intent to its logical conclusion, therefore, then the study of ecosystems is not the exclusive domain of ecologists and environmentalists but instead represents interactions and associations of *all* types within given bounds, whether the bounded area is "a lake, a forest, or a grassland" or "a city, a nuclear plant and surrounding region, or even a single household" (198-9). Differences between elements of the ecosystem may be quantified on continua, rather than in dichotomies. In the above example, snowfall would reside

toward the "no intellectual activity" end of a continuum; writing poetry with complex metaphors and allusions would reside towards the "high intellectual activity" end; and the beaver's dam-building would fall in between, but much closer to the poetry than to the snowfall. Likewise, we could map a continuum measuring individual elements' relative impact on the ecosystem. In all cases, human activity is just one category of elements among many in a functioning ecosystem.

The study of certain interactions, such as food webs and the water cycle, is indeed associated with hard-science ecology; however, if one were to attempt the admittedly impossible task of accounting for *all* interactions within a particular ecosystem, and if that ecosystem included humans, then disciplines other than ecology, particularly the social sciences, would necessarily play a part. Some varieties of ecology have already begun working toward such an integrated approach. Human ecology, for example, "emphasizes the problem-solving significance of human culture and behavior, from food procurement to social support systems as well as political and religious life. In particular, it emphasizes the complex ways in which humans *shape and are shaped by their environment* (Bates 1, emphasis added). It "links the subject matters of anthropology, biology, geography, demography, economics, and other disciplines in an attempt to understand the relationships between people and their environments" (4). Some branches of environmentally-oriented literary criticism are also moving in this direction. Ecocriticism, according to Terry Gifford, "is moving in the direction of giving attention to environments other than the largely natural, so that social and natural environments are being recognized as inseparable" (22). Buell writes that, "Environmental criticism's working conception of 'environment' has broadened in recent years from 'natural' to include also the urban, the interweave of 'built' and 'natural' dimensions in every locale, and the interpenetration of the local by the global" (Buell 12). It would seem convenient, then, to borrow some sort of methodology from one of these enlightened, integrated disciplines, such as the networking approach taken in *Ecological Networks* (Pascual and Dunne). The drawback to those methodologies, however, is that their emphasis, regardless of their multidisciplinarity, remains

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ecology. Even where an anthropocentric (or at least anthroposympathetic) approach is taken, the "natural" environment (flora, fauna, air, water, soil) is an ever-present concern. My emphasis is on the character of utopianism and its changing manifestations in literature. Although I will attempt to account for ecological factors (i.e., pertaining specifically to the "natural" environment) in the formation, maintenance, and outcome of utopias, I will primarily examine other types of interactions that seem important to McAuley's work, such as mob behavior, free market capitalism, and posthuman technologies. My working definition of "ecosystem," therefore, will follow Lawrence Buell's broad interpretation, which more or less includes *everything* -- all the things, people, and ideas -- contained within or impacting a location defined by some kind of boundary, whether the boundary is "natural" or arbitrary, and all the interactions pertaining thereto (Buell 12). As indicated above, these boundaries are inevitably permeable, allowing mutual construction between a given ecosystem and its larger environment. "Environment" may be substituted as a synonym for "ecosystem" but may also be used to denote particular aspects of an ecosystem: the physical environment of a moon, the ideological environment of a public policy, the psychological environment of a household.

1.4 Framing a Complex System

What method, then, can we use to account for all the factors that affect a given utopia? As Peter J. Taylor writes, it is faulty reasoning that attributes a significant phenomenon to one or two causes (31). For example, although the American War for Independence is popularly counted the brainchild of a few Founding Fathers, those men could never have defeated the British military alone, nor established a Constitution that all states willingly abide by, nor implemented a federal system of government without the alliance of uncountable actors, factories, horses, political and economic principles, printing presses -- not to mention foreign allies. The number of factors that contributed to their success is truly mind-boggling. This is not to say, however, that analysis is impossible without a computer powerful enough to account for every single variable: there is such a thing as getting "close enough." In *Unruly Complexity*,

Taylor provides some guidance in this area. He advocates an analytical approach characterized by "intermediate complexity," a compromise between oversimplification and the quixotic attempt to account for "all" factors or variables in a system (165). In one example, he traces numerous factors that contributed to soil erosion in Oaxaca, Mexico, ranging from historical events to local institutions to agricultural practices (see Taylor 162). Although this chart is far from accounting for all variables, it represents a good faith effort to recognize a variety of significant contributors to soil erosion in that geographic area.

I will follow Taylor's concept of intermediate complexity in framing my analysis. In order to trace interactions within and between utopias, I will distinguish between five aspects of utopian enterprise, which in Part 3 will form the basis of tables used to juxtapose and analyze various utopias in McAuley's work.

- *Objectives* will include the goals of the utopia as well as the philosophical beliefs on which the utopia is founded.

- *Actors* will include people involved with and affected by the utopia. As outlined later in the section on Actor-Network Theory, these will be categorized broadly according to role (e.g., driving versus supporting actors). Selected actors will be treated in more depth.

- *Environment* will include the zeitgeist surrounding the establishment of the utopia, as well as the changing physical, social, political, economic, and other environments that affect the utopia over time, including interactions with other utopias. This category will also deal with relevant actants, as defined in the section on Actor-Network Theory.

- *Execution* will include the utopians' actions related to the creation and maintenance of the utopia, as well as the particular social structures, institutions, laws, and culture developed specifically to support the utopian objectives. This aspect also includes actions that are not strategically coordinated with the utopia's founding

principles and which may be harmful, conflicting, chaotic, and informed by opposing

agenda and interests.

- *Outcomes* will include both intended and unintended consequences related to the

  creation, maintenance, evolution, transformation, and, if relevant, death of the

  utopia.

These five aspects are compatible with the examination of any utopia, literary or otherwise,

whether it stands alone or in juxtaposition with other societies. When used to frame the analysis

of an ecosystem of utopias, the five aspects will help to organize and clarify large amounts of

information pertaining to societal interactions.

1.5 Actor-Network Theory

Now that we have a framework, we need language that allows us to describe

interactions that fall in the domains of many disciplines without creating a pastiche of jargon.

This terminology should be non-discipline-specific so that it can interface smoothly and non-

prejudicially with descriptions of psychological, economic, political, biological, and other

phenomena, a sort of master vocabulary that serves as a unifying thread throughout a complex

analysis. I have chosen to adapt the language and methods of Bruno Latour's Actor-Network

Theory (ANT) for this purpose.

A "radical material semiotics," ANT sets out to describe networks of all kinds, in terms

not just of the human beings and abstract concepts involved, but also all relevant material

objects (Law, "Actor Network Theory" 141). Latour described it in his droll fashion as "a social

history of things and a 'thingy' history of humans" (*Pandora's Hope*). Much of philosophy and

the "social sciences" (a term he disputes at length in *Reassembling the Social*) have tended to

divorce analysis from material reality, preferring to treat interpersonal, political, and

metaphysical concerns. Semiotics, for example, which Latour still teaches "in small doses," can

be "damaging" in larger amounts "if it convinces you that you are not dealing with something

real" (Crease 22). Like Ralph Waldo Emerson, Latour wanted to "fasten words again to visible things" (qtd. in Sanders 188).

Latour's early applications of ANT focused on laboratory science. In his landmark work, *Laboratory Life: The Social Construction of Scientific Facts*, co-authored with Steve Woolgar, Latour challenged the common perception of the laboratory as a place where scientific facts are systematically discovered via the scientific method. Instead, by approaching the laboratory in the same way an anthropologist would approach a foreign tribe, and taking nothing for given, Latour and Woolgar paint a picture of quite a flawed, politically-motivated, self-interested process. They describe laboratory and scientific community networks with elements as diverse as paper trails, blackboards, expensive equipment, and reputation-driven publication, with the ultimate goal of demonstrating how "a hard fact can be sociologically deconstructed" (107). Similarly, in *The Pasteurization of France*, Latour demonstrates how Louis Pasteur was not a lone hero-scientist, single-handedly leading France into a new age of cleanliness and hygiene, but rather the point-man in a complex network consisting, in part, of "the public hygiene movement, the medical profession (both military physicians and private practitioners), and colonial interests" (back cover). ANT, as applied in these works and many others, frames the study of the production of knowledge with the "agents, social institutions, machines, economic markets, and organizations" that make such production possible (Elbanna 404). This methodology enables a more nuanced, and hopefully truer, analysis of a complex system.

ANT "proper," if there can be said to be such a thing, involves a large number of useful and illuminating concepts, all of which could be helpful in this thesis; however, since I am already piecing together quite a complex methodology, I will keep my use of ANT as simple as possible, an approach that is wholly consistent with ANT scholarship. John Law, a prominent ANT scholar at the Centre for Science Studies, writes:

> [T]hough it is possible to identify certain preoccupations and concerns common
> to these texts . . . actor-network is not a single orthodoxy, a fully consistent

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body of writing with its holy scriptures. Indeed, the most creative texts are often

those that change and rework its preoccupations and its tools - or which

combine them in one way or another with those of other approaches with which

it is in dialogue. (Law, "Actor Network Resource")

This is precisely what I will do with ANT: combine it with ecology in order to analyze literary

utopias. Primarily, I will borrow two things from ANT: basic terminology and the mindset of

"follow[ing] the actors" in order to trace networks (Latour, *Reassembling* 12). My lexicon will

include terms commonly used in ANT as well as a few of my own devising.

1.5.1 Structural Terms

Actor: Michel Callon and Bruno Latour define an actor as "any element which bends

space around itself, makes other elements dependent upon itself and translates

their will into a language of its own" (286). Note that, although early definitions

of "actor" specified it to be a human being, this definition is, rightly, more

general.

Driving Actor: An actor central to a particular network's function or dynamics. I may also

use "central actor."

Supporting Actor: An actor participating in a particular network but not central to its

function or dynamics. I may also use "peripheral actor."

Actant: This is generally defined as the non-human version of "actor," but we run into

problems when we consider artificial intelligence, aliens, dolphins, and other

intelligent non-humans; therefore, I am including all of those in my definition of

actor. An actant is any network element *not* capable of acting with volition. On

occasion, following the precedent of some ANT practitioners, I may streamline

syntax by using "actants" to encompass both actors and actants.

Network: Callon defines this as "a series of heterogeneous elements, animate and

inanimate, that have been linked to one another for a certain period of time"

(93). I would revise this slightly: a series of heterogeneous elements, animate and inanimate, that *are or* have been linked to one another *at a certain point in time*. Since networks are by nature dynamic, the best we can do when describing a network is to take a snapshot of its characteristics at a particular time. Longevity of connections is not assured in any network.

Actor-Network: This term recognizes the inextricable, semiotic nature of actors and networks. Callon writes that, "The actor network is reducible neither to an actor alone nor to a network. . . . [it] is simultaneously an actor whose activity is networking heterogeneous elements and a network that is able to redefine and transform what it is made of" (93).

Base: The underlying structure or skeleton of a network.

Superstructure: Network structures that depend for support on other network structures (base), which must be in place prior to the emergence of the superstructure. Although "base" and "superstructure" are borrowed from Marxist theory, they are not intended to carry the same philosophical connotations: they are intended to be neutral terms describing multi-level network structures.

Metacommunities: Relatively homogenous networks, such as privateers, genetic engineers, or vacuum organisms, which intersect more than one heterogeneous network, such as cities, biomes, or nations. Members of a metacommunity exhibit common characteristics and practices and may interact with each other in a social, competitive, or reproductive fashion (Holyoak 7).

1.5.2 Dynamic Terms:

Stability: The tendency of a network, during a given period of time, to retain its essential qualities with little to no perceptible change.

Perturbation: Any occurrence which disrupts a network's stability for any period of time, whether the network returns to its previous state or not.

Resilience: The tendency of a network to return quickly to a previous, relatively stable state.

Buffer: Any element that helps to mitigate perturbations.

Persistence: The tendency of a network to remain stable over what an observer perceives to be a long period of time, despite perturbations.

Sustainability: An observer's prediction about a network's future persistence, based on its present qualities.

The above terminology, both structural and dynamic, will be supplemented in Part Two, which will derive further network principles from McAuley's work.

1.6 Econet Criticism

I have tentatively dubbed this blend of ecology and Actor-Network Theory "econet criticism." Each individual discipline will not be applied in the depth one would expect from a specialist but rather touched upon as necessary in order to describe and analyze McAuley's ecosystem of utopias. In order to grasp the big picture and yet remain within the scope of a master's thesis, I will have to sacrifice depth of analysis in many cases: I will explore *some* actors and networks in great detail and leave others untouched. Assuming this method were to be used as part of a constellation of articles analyzing an ecosystem utopia, this thesis would constitute the ground-breaking overview and initial analysis of the work. It would be the task of other articles to explore various facets of the ecosystem in greater depth.

Following are some of my operating assumptions about ecological networks, based upon Latour's work and informed by ecology:

- No network "can be fully known in all of its interactive details, and accordingly seeks to elucidate global properties that characterize 'core' dynamics" (Bernard Patten, qtd. in Kingsland 213, Taylor 31ff).

- Networks, such as ecosystems, may be relatively stable at a given point in time, but they are *never* static (Pascual & Dunne 11, Colleen Clements, qtd. in Garrard 57, James Lovelock, qtd. in Garrard 173).

- Change is inevitable (this is a corollary to the previous point).

- Change is not random; instead, it is predicated by internal and external influences (actors and actants, including non-material ones).

- In theory, a "closed" network or ecosystem is possible, but in practice, individual networks are influenced by outside forces, whether those outside forces are actors, actants, or entire networks (Dodd 27, 103).

- Networks are multi-scalar: they exist at all scales, from the small/local to the large/global. An individual network may have influence at all scales, no matter how "small" it appears to be (Buell 96, Alaimo, *Bodily Natures* 158).

- A network does not stand alone, nor is it "one": numerous smaller networks are nested within larger ones, and every network is interconnected to some extent with other networks (Kingsland 199, Buell 67, Dodd 72, Pascual & Dunne 144ff).

- In accordance with chaos theory, particularly the "butterfly effect," small, seemingly insignificant things can have significant effects on a network.

- Non-human and non-living actants have roles in every network, sometimes significant or even pivotal (Law, "Actor Network Theory" 147)

- There is a mutually constructive relationship between and among actors and actants (Selinger 8).

- Non-material actants, such as justice or beauty, have no existence independent of material actants/actors. They are rooted in the material, just as the mind is rooted in the body - the substrate is important (Law, "Actor Network Theory" 142, Hayles xiv).

- A human actor is never "fully in command. . . . the constructor has to share its agency with a sea of actants over which they have neither control nor mastery. . . .

there is no maker, no master, no creator that could be said to dominate materials, or,

at the very least, a new uncertainty is introduced as to what is being built as well as

to who is responsible for the emergence of the virtualities of the materials at hand"

(Law, "Actor Network Theory" 31-2; see also Alaimo, *Bodily Natures* 147).

• Networks are rarely, if ever, *neat*. Neatness in ecosystems and human relations only

exists in the "grand narratives" of history books, novels, and other propaganda (142).

• Such narratives tend to reify practices and realities that actually developed

organically and might have developed differently (148).

• They also omit messy details that do not support the chosen narrative.

These are my primary operating assumptions; others will emerge organically as the thesis

unfolds.

1.7 Structure of Thesis

This thesis is divided into four parts. Part Two builds upon the concepts explored in this

introduction by examining evidence of McAuley's social theories related to the ecosystem

utopia. Part Three attempts an application of econet criticism to McAuley's ecosystem of utopias

in *The Quiet War* and *Gardens of the Sun*, organized by historical eras. Part Four, the

conclusion, will examine some of the implications of this work for utopian studies.

PART TWO

MCAULEY'S SOCIAL THEORY

CHAPTER 2

THE NATURE CONTINUUM

In Part 1, I aligned myself with Arthur Tansley and others in asserting that human behavior and culture are not somehow separate from "nature." "Nature" is not "everything but humans," or "that which is not constructed," or "that which happens by accident," but rather "everything that is" (Kingsland 184). This is no idle philosophical distinction, either: one's view of the relationship between nature and culture may have a profound effect on one's behavior, and in particular, one's brand of utopianism. There are two reasons to broach this issue. First, it underpins the ecosystem utopia model, as discussed in Chapter 1. Second, it is prominent in the ideological environment of McAuley's utopias, in terms of the five aspects of utopian enterprise. The latter is what we will explore in this chapter.

2.1 Dichotomy versus Continuum

The nature-culture dichotomy perspective has two opposing sets of consequences: if nature and culture are in conflict, then humans are either the rightful masters of nature or destructive interlopers (Garrard 21, 28). In both cases, humankind stands outside of Nature. The rightful master of a thing may use it as he or she wishes; any consequences accrue only to the master's benefit or detriment. In this view, a civilization that uses up all of a natural resource is morally accountable only insofar as its mismanagement has created hardships for its members in the future. Restraint should be practiced in order to preserve resources for future use and to avoid infringing upon other people's rights. This view is compatible with extensive redesign of the environment – farming, building dams, rerouting rivers, building roads – in order to optimize it for the benefit and convenience of humans. Taken to the extreme, this philosophy becomes social Darwinism, in which individuals focus primarily on their own survival, prosperity,

and happiness, and perhaps that of their descendants and other family. Whether their actions create hardships for others is of no consequence unless it will in turn affect their own well-being.

If human beings are interlopers, then the moral consequences of their interference extend beyond themselves to affect the intrinsic rights of that which they exploit. In this view, the civilization that depletes a natural resource is morally culpable not only for the hardships it creates for its members but also for the extinction of a resource that possessed rights or value in and of itself, independent of its use-value to humans. In more extreme views, our very presence "in" nature upsets the homeostatic balance that would otherwise exist. In this point of view, restraint should be practiced in order to leave nature as pristine and unaltered as possible. Human populations and lifestyles should be kept under strict control in order to limit their environmental impact, regardless of whether this contributes to human happiness, well-being, or prosperity (Garrard 22).

If, however, culture resides towards one end of a continuum collectively called "nature," then human behavior can be seen in a different light. In this view, humans neither transcend nature nor approach it as aliens. They are still qualitatively and quantitatively different from other elements of the biosphere, but no more so than a dolphin differs from a daffodil or a tree from a thunderstorm. Their position in the biosphere, prior to action, is morally neutral – neither masters nor intruders. Each human is a single network element amongst countless others, all interconnected and mutually dynamic (Buell 67). They still possess moral responsibility for their actions, but not because they are "already" above or outside of nature. The extent to which the individual is capable of predicting the consequences of his actions upon the network at large determines the level of her moral culpability. When unexpected outcomes occur, her subsequent response accrues moral consequences. Restraint should be practiced in order to protect both humans and nature overall (which includes humans), especially to prevent catastrophic perturbations of the network, with the unpredictable outcomes that may ensue. In this perspective, there is no moral objection to altering the environment to suit humans, since

altering the environment is one of our adaptive behaviors, just as a beaver builds a dam – *as long as* we are careful to avoid causing catastrophic imbalances in the system.

In *The Quiet War* and *Gardens of the Sun*, the clearest example of the human-as-interloper perspective is that of the greens on Earth, which include both moderate and radical greens as well as "green saints," a unique mixture of expert ecologist and green theologian that arose in the aftermath of the Overturn. Confronted by ecological catastrophes of Biblical proportions, the people of Earth seek desperately for saviors – and for answers. Ecologists and environmentalists who for years have sounded the alarm about global warming are ready with a response: the Earth is a living organism personified by Gaia, whom humanity has nearly destroyed. Their only salvation, according to the greens, is to squeeze the population of Earth into self-sufficient arcologies, do no further harm to Gaia, and devote immense time and resources to restoring Gaia to a pre-industrial paradise. In this way, the human interlopers are put into quarantine, into "urban islands isolated like pockets of plague from the regenerated and reconstructed wildernesses that surrounded them" (*QW* 240).

By splicing elements of Gaia worship with traditional Catholicism, the greens provide a religious justification for such harsh penance for the ecological sins of generations. The green saints, a cross between mini-Popes and ancient Greek tyrants, can decree laws unilaterally and commandeer any resources or manpower they wish for ecological remediation. For example, they implement a one-child policy in order to keep the population under control. They also create a special quasi-military team of ecological engineers, the Reclamation and Reconstruction (R&R) Corps, to clean up the Earth one polluted ecosystem at a time. Projects like the cleanup of Lake Champlain require extraordinary efforts: just rejuvenating the lake-bottom mud takes half a year. After that remains the task of rebuilding "an entire trophic web . . . from scratch," both in the water and along the lakeshore (*QW* 33). Other projects involve dismantling cities, suburbs, and roads to erase all traces of civilization (*QW* 35). An array of mirrors is launched into orbit to reduce the amount of sunlight that reaches the surface, and

special trees absorb excess carbon dioxide from the air (*QW* 148). People are forbidden to live outside of the great cities, though some do so anyway: the cities, after all, are designed to keep people from harming Gaia, not to make people happy. In Brasilia, where the overcrowding is most severe, the gene wizard Sri Hong-Owen drives "through a dense traffic of bicycles and bicycle carts towing improbably large loads, army and civilian trucks, buses and jitneys so crowded that they looked like heaps of people locked together like army ants around a morsel of food. . . . People lived their lives right out in the open, like animals" (*QW* 240). Those who escape the cities and manage to scratch a living in the "the vast and tumbled deserts" and "the ruined cities" produced by the Overturn are dubbed guerrillas, wildsiders, or squatters, and the military fights continually to push them out of lands the green saints want to control for Gaia (*QW* 15).

From the green perspective, therefore, human happiness and rights are not relevant concerns. "Utopia" is a restoration of Gaia to her supposed original, primeval state. The human role in this utopian vision is wholly one of duty and penance, perhaps to be rewarded by their descendants' ability to look out the windows of their skyscrapers and rejoice that the Earth has been resurrected from humanity's poisonous touch.

Although the ruling families of Greater Brazil have aligned themselves with the greens and number every green saint amongst their consanguineous members, it is an alliance largely born of political expedience: promising ecological renewal and protection from the worst effects of the Overturn is, after all, the way they have gained power (*QW* 148). The majority of these family members make shallow gestures of piety towards God and Gaia, but in reality see themselves as masters of the Earth – a greatly damaged Earth, of course, but nevertheless little more than a source of revenue and political power. Descended from the original founders of the megastate, chiefly pirates and criminal families, these Brazilians are shrewd survivors who cooperate with others when it is fruitful or unavoidable but have every intention of being the fittest to survive, with or without their family members (*GOTS* 150). For many of these, being the

fittest means controlling as many resources as possible and flaunting those resources to demonstrate superiority over the masses. Despite crowding everyone else into tiny living spaces, the great families still have large estates with well-watered gardens and full swimming pools, even in the midst of a severe drought (*GOTS* 299). Some have illicit hunting lodges out in the wilderness where humans are forbidden to go. They hunt for sport, even though most animal populations are precarious due to scarce resources (*GOTS* 65, 299). After all, to the victors go the spoils. Not only are humans the masters of nature, but those who can wrest control are the masters of other humans. This point of view engenders a utopian vision of imperialistic conquest in order to support the luxurious lifestyles of the ruling families.

The Outers, descended as they are from a legion of scientists, have their own version of the human-as-master philosophy: the triumph of science over nature. In this perspective, nature and evolution are a series of accidents that intelligent people can and should improve upon. Although Sri Hong-Owen originates on Earth, she embodies this perspective perfectly. She believes that

> the biosphere was a vast space of possibilities. Billions of years of life on Earth had explored only a small part of that space. So much more could be unlocked with just a small toolkit and a little imagination and nothing was unnatural because nature was not limited to the variations on a few themes that evolution had so far realized. (*QW* 152)

Using the "toolkits" they have developed over the years, the Outers routinely bring life to lifeless places, transforming the airless moons of the Outer System into an array of customized Edens. Their social engineering is no less impressive. To maintain civil stability in such a dangerous environment, they have crafted a system of checks and balances that not only provides safety valves for social unrest but also promotes a spirit of brotherhood and amity, an emotion Umm Said calls *amae* (*GOTS* 192). They have even adapted their own bodies to their hostile environments with genetic "tweaks": resistance to radiation damage, arterial microhearts that

prevent blood from pooling in the extremities, and the ability to will themselves into a form of hibernation, to name a few. The average Outer is visibly different from the average Earther – tall, skinny, and pale – and quite a few Outers play with more radical posthuman changes, such as tails and wings. The younger residents of Europa have adapted to their cold underground ocean by coding extra layers of fat and thick coats of body hair into their genes, giving them the appearance of seal people.

Since the Outers consider themselves to be the next step in human evolution, some regard unaltered humans with contempt. Jibril, for example, one of the cosmo angels in East of Eden, enjoys mocking Macy, whose "base human stock compromise[es] East of Eden's aesthetic totality" (*QW* 142). He calls her a "wide-hipped, spraddle-legged chimpanzee" (145). The Ghosts, a fanatic posthuman cult, go even farther and claim that the Outers should abandon their Earth-inspired habitats, which "are no more than imitations of the African forests that our ancestors of the long ago quit for the savannahs and seashores." Holding onto these primitive surroundings supposedly inhibits mental evolution because "[t]hey force us to use our monkey muscles to get about in them, force us to think monkey thoughts." Crafting a true posthuman utopia requires surroundings that foster new ways of thinking by virtue of being "entirely new. Unfettered by memories of Earth" (*GOTS* 214).

Sri Hong-Owen pictures Outer cities as "[g]reen cathedrals celebrating the triumph of rationality" (*QW* 241). She isn't far wrong, for the Outers have managed to live at peace with each other for over a hundred years. But the triumph of science is only half of the story, and the nearly-stale half, at that. The exciting new trend amongst young Outers is hiking – hiking and camping away from the cities for a week at a time, getting to know their land intimately. Like some groups of Native Americans, they have "'different tribes with different totems'" (*GOTS* 104). Tommy Tabagee, the Pacific Community's ambassador to the Outers, sees many parallels to his aboriginal ancestors, who navigated the Australian outback with the help of songlines, songs that functioned as verbal maps (*GOTS* 19). This new trend springs from a

fourth generation of Outers who see themselves as natives rather than pioneers or refugees. They are interested in more than simply surviving and inscribing their own desires upon the landscape, or hiding away in their constructed gardens to live lives of the mind: they appreciate the land's own wild beauty, and the often-violent celestial histories that created it. As Newt Jones tells Macy Minnot, "'When they first came here, our grandparents and great-grandparents felt the need to huddle together against a hostile environment. But this is our home now. We don't need cities anymore'" (*QW* 363). For this generation, it is not humans *versus* nature but rather humans *with* nature.

Sometimes, it is humans = nature, as in the case of Karyl Mezhidov, a gypsy prospector on Saturn's moon Iapetus. Karyl experiments with psychotropic drugs in the pursuit of "an ideal oceanic state in which world and self melted together." When successful, "he diffused outward into the moonscape and became one with it, and in that state of blissful understanding potential rifts, lodes, and reefs shone out with their own particularity as if illuminated from within" (*GOTS* 102). His companion, Felice Gottschalk a.k.a. Dave #8, still learning to have an identity of his own after escaping from Sri Hong-Owen's spy-clone program, is in no hurry to lose that "fragile sense of self" in some kind of mystical union with the land; he is afraid that taking Karyl's drugs will make him "lose control and melt and flow away and disappear completely" (*GOTS* 102). This contrast helps to highlight an important difference between the aliens and the natives on the Outer moons. The aliens are like new swimmers who, lacking faith in the ability of their bodies to float, cling nervously to the side of the pool. The young Outers not only feel comfortable with a low-seated buoyancy but navigate the contrary and dangerous currents of the ocean as a matter of course. Macy, for example, marvels at the Free Outers' ability to play games in a clear bubble habitat, "laughing and rough-housing as if it were perfectly natural, as if there wasn't killing cold and vacuum everywhere beyond the bubble's thin skin" (*GOTS* 108). They understand their surroundings not only as scientific observers but as one experiences insight about one's own self – a new ecological wisdom for a new land. The boundaries

between self and environment blur as humans extends their proprioceptive senses out into their surroundings.

2.2 Avernus on Nature

For a more philosophical rendering of this integral perspective, we turn to McAuley's greatest utopian, Avernus, the gene wizard whom Sri Hong-Owen thinks of as the Outers' Einstein or Darwin (*QW* 107). McAuley signals her central importance to his story through a number of rhetorical cues: the reverence with which the Outers regard her; the numerous references to her genius, particularly concerning her inventions on which life in the Outer System depends; the mystique and anticipation that he creates throughout the first half of *The Quiet War*, during which we wonder when she will make an appearance; the sense of fulfillment when she finally does appear, to deliver an important speech in the exact center of the book (the 27th chapter out of 53); and so on. Avernus gives the most eloquent voice to the nature continuum. On Earth, for example, Brazilian singleship pilot Cash Baker admires a garden she is making but asks whether she must assign people to keep nature from taking over. Avernus responds, "'That suggests that a garden is separate from nature. It is not. No more than we are. No, a garden is simply a small part of the natural world on which we have imposed our own ideal of beauty. . . . All we do, then, is seek to improve on nature'" (*GOTS* 313).

In this statement, Avernus clearly places humans and their cultures, which engage in literal and metaphorical gardening, within the nature continuum, as utopian actors who mobilize but do not wholly control networks. She recognizes that this "gardening" can sometimes be harmful; after all, humans did contribute unwittingly to the Overturn; however, she believes that, "we are far more than mere agents of destruction. . . . That we are not enemies of nature, nor are we separate from it. We are at our best agents who drive evolution in ways that are both useful and beautiful. Gardeners who could make a garden of the Earth, and of many worlds besides'" (*GOTS* 314). Thus, not only is it natural for humans to alter their environments, to

drive physical and social evolution consciously, but gardening – let's be explicit and call it *utopianism* - is a human instinct, perhaps the noblest one of all.

As this gardening instinct is expressed, with as many different ideals of beauty as there are gardeners, it is natural for differentiation to occur. Avernus warns that, aside from the inherent injustice of doing so, turning this differentiation into an excuse to persecute the Other has potentially self-destructive consequences. To illustrate, she uses the analogy of herring gulls in the Atlantic Ocean. Occupying semi-isolated niches "in a geographical circle broken at one end" along the shores, the herring gulls differentiated over time into subspecies that could interbreed with their near neighbors. The subspecies from opposite ends of the semi-circle, however, could not interbreed. In the days before scientists could analyze DNA, naturalists were unsure whether the gulls even belonged to the same species. The problem was that there was no clear boundary between separate species; rather, it was a continuum that represented incremental change. The implications for utopianism in general, and posthumanism in particular, are profound. Avernus points out that the extremists on Earth and in the Outer system alike fail to recognize the continuum of human variation; instead, they think the Outers have become something wholly "separate from the baseline species on Earth." As a result, "[e]ach end of the continuum would destroy the other, but if you destroy the part of humanity furthest from you, that makes the part next to it the extremity. Which must also be destroyed. And so it goes, removing segment after segment from the continuum until there is only one segment left. And that will turn on itself" (*QW* 387). When taken to its logical conclusion, therefore, persecution of the Other results in a continual redefinition of the standards of otherness until nothing remains but paranoia and self-destruction. This perspective, neither eutopian nor conducive to the long-term success of any segment of humanity, represents a strong pragmatic argument against the nature-culture dichotomy. Whether posthumanity is at issue or not, the dichotomy perspective tends to engender an artificially narrow view of what is "right" and "normal." Intolerance and strife are the logical, dystopian results of such a view.

<u>2.3 Blurred Boundaries</u>

McAuley reinforces the continuum perspective by blurring the boundaries between ostensibly separate domains in order to complicate the relationships between human, animal, landscape, and technology. Outers, for example, are frequently associated with birds. A group of young Outers eager to speak with Avernus is referred to as a "gaggle" (*QW* 116). The Outers at the Permanent Peace Debate engage in "aviary chatter" (*QW* 288). Refugees from the Quiet War who flee to Uranus are a "flock of the dispossessed" (*GOTS* 87). Earthers, on the other hand, are usually associated with ants. Engineers preparing the J-2 singleships for launch are compared to "ants grooming alletes about to fly the nest" (*QW* 196). Brazilians crowded onto rickety public transports resemble "army ants around a morsel of food" (*QW* 240). Citizens pouring into a public square for a war riot are "like ants swarming a sugar lure" (*QW* 243).

Likewise, much of McAuley's technology takes on animal and human qualities. Flying drones, for example, are frequently compared to birds, both individuals and flocks. In one Outer city, rival drones are depicted as predator and prey: a "bird sized" drone "began to chant slogans about peace and love in a raucous speech. . . . Then a drone stooped down like a hawk on a sparrow, plucked the little machine from the plastic, and dropped away toward its handler on the plaza below" (*GOTS* 145). This suggests that the hawk-like drone has at least a rudimentary intelligence that allows it to be trained. In Hannah's bubble habitat, small drones "move in flocks, like birds" and collect floating debris, like dead leaves. They are not merely garbage collectors, however – they also seem to have emotions: "If you catch one it starts to make this beeping noise, louder and louder. Because it's lonely" (*GOTS* 404). McAuley also ascribes living characteristics to many space vessels, which are equipped with artificial intelligence. After the Quiet War, for example, "A hundred murdered ships swung around Saturn in endless ellipses." Some of those ships house "AIs driven insane by demons disseminated by Brazilian spies" (*GOTS* 9). Newt Jones's ship, the *Elephant* (which, incidentally, is pink), casts a

shadow that resembles "a black animal racing across the bright ground below . . . as they feathered in to a perfect landing" (*GOTS* 121).

Such similes do not necessarily challenge the notion of separate domains: after all, they may be taken as mere metaphor, and the symbolism of Outers flying high (in outer space) and Earthers crawling on the ground like ants is not terribly subtle. They take on added significance in other cases, however. If equipped with wingsuits, for example, Outers on some moons can fly, and some go so far as to obtain genetic alterations that allow them to fly without suits. Macy Minnot's grandson, for example, "wants to get the full set of traits, practice in different kinds of gravity, different environments" (*GOTS* 405).

Such genetic alterations certainly challenge the morphological boundary between human and bird, but it can be argued that this remains a cosmetic alteration, albeit a substantial one. The experiments related to the singleship pilots are a different story. In preparation for the Quiet War, Sri Hong-Owen develops a series of surgical and genetic treatments that radically alter the brains and bodies of pilots so their minds can meld with their ships' operating systems. When the pilots are joined with their ships, it is difficult to determine where the human minds end and the artificial intelligence begins: the procedure involves "rewiring or augmentation of their nervous systems that would allow them not only to plug directly into the plane's control systems, but also to briefly boost their neural-processing speeds" (*QW* 18). In this state, "It wasn't like flying the plane. It was like *being* the plane" (*QW* 20). Although this is not a permanent cyborgization – the pilots can completely disconnect from their ships – it becomes an integral part of the pilots' identities, the loss of which contributes to Cash Baker's deep depression after his dishonorable discharge.

This particular bridge, between human and machine, has been fraught with its share of anxieties in science fiction and bioethics; nevertheless, it represents an improvement of the human, at least in some respects. Likewise, the addition of animal morphology to humans is designed to improve the human, to adapt it to a new environment or appeal to a new

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posthuman aesthetic. Potentially more problematic is the elevation of the animal. Before performing radical surgery on the singleship pilots, Sri Hong-Owen tests the procedure on rats, then releases them into the tunnels beneath the military base. Improving the rats' neural processing has results that really should not have been surprising: the evolution of rat culture and written language. "A lean brindled grandfather rat more than half a meter from its nose to the tip of its tail . . . had elaborate notchings in its ears. . . . 'They're learning,' Luiz said. 'Developing culture. One of the medics reckons those notches are some kind of graphic alphabet.'" Luiz speculates that since the same procedure was performed on both rats and pilots, "in a way, the rats are our brothers." The rats have evolved so far, in fact, that they are able to best the singleship pilots in a battle of wits. The pilots periodically enter the rats' tunnels to hunt them for sport. Anticipating their next visit, the rats prepare a trap: they activate a digital picture frame in an office that has been abandoned for over a hundred years, knowing that it would draw the humans to investigate. Once the humans have all crowded into the room, the rats cause the ceiling to give way, dumping a huge mound of rat excrement on the pilots (*QW* 139-40). This incident reveals a level of foresight, strategy, and even humor that troubles the pilots – after all, who knows how much higher these rats may rise? What unforeseen consequences may arise with such a fundamental change to a species in the ecological network?

The most radical example of boundary-blurring is Sri Hong-Owen's masterwork: her posthuman "clade." She models this clade after Avernus's phenotype jungles, in which one species is tweaked into a wide variety of phenotypic expressions that make up an entire ecosystem of their own, a very tightly-knit network due to the shared genotypes. Rather than basing her clade on ferns or some other such plant life, she bases it on her own DNA – a human phenotype jungle:

> Things like severed hands shelled in bone lurked amongst tangled prop roots.
>
> At the bottom of a deep pool of clear water, nets of pale tubes pulsed and

quivered like unstrung arteries across black sand. A flock of hand-sized butterflies whirled around a slanting shaft of chandelier light, their wings covered in pelts of fine black hair. (*GOTS* 394)

There are no non-human organisms in this ecosystem; all niches have been populated with human derivatives. Furthermore, due to a botched "experiment in immortality," Sri's own body has been radically altered:

Her body had swollen with tumors teeming with independent life. . . . Although the tumors were under control now, she was confined to a series of vats. . . . Sri had begun to reshape herself. She had altered and improved vacuum organisms designed by Avernus to capture sunlight and convert it into electrical energy. As they spread across the surface of Janus, Sri's modified body grew ever larger. Copies of her original body were cached here and there in that great mass, each sharing the same sensory inputs, the same thoughts. (*GOTS* 396-7)

Sri has become the Gaia of this little ecosystem, which is "a living organism whole and entire" in perhaps a more profound sense than the Earth itself (*QW* 15). Her own body extends like a nervous system throughout the habitat, and her will directs its structure and evolution. In return, the habitat sustains her, expands her awareness, and gives her a future she would not otherwise have had. In the clade, there are no clear boundaries between human, animal, plant, landscape, or technology; all are one, unified by Sri. Although this is arguably McAuley's creepiest example of boundary blurring, it also helps to symbolize a humanity at one with the environment, albeit an environment problematically purged of all non-human species.

2.4 Sri Hong-Owen versus Avernus

McAuley clearly intends the reader to compare Sri Hong-Owen with Avernus because Sri herself persists in doing so. In fact, her ambition to surpass Avernus in reputation and accomplishments consumes every moment of her life and drives significant portions of the plot.

Before the war, Sri tries to initiate contact by sending Avernus a signed copy of her dissertation (*QW* 101). Later, she manages to track Avernus down as she flees the Quiet War. Confronting Avernus in one of the gene wizard's secret gardens, she issues a demand for collaboration. In her desire to demonstrate superiority, however, she cannot resist criticizing Avernus's garden as being too derivative of Earth morphologies: "'People like us need no common standard,' Sri said. 'And anyway, it's purely random. We should be free to create anything we want.'" Avernus replies, "'I freely chose to create this'" (*QW* 387). Refusing to collaborate under terms of surrender, she evades capture and leaves a humiliated Sri temporarily trapped in the garden. Sri then spends the postwar period travelling the Outer System in search of all of Avernus's gardens so that she can study them and learn Avernus's secrets.

To clarify the differences between the two women, we must examine Sri's reactions to two of Avernus's gardens: the banner garden and the polychine garden. In the banner garden, a population of plant stalks produces "banners of every conceivable color and pattern" which "exchanged genetic material by folding themselves together and forming a patchwork chimera that pulled apart into two halves. . . . And then new stalks arose, and the cycle began again." The random process of chimera formation results in "fleeting patterns of random and unrepeatable beauty." Sri admires this work because "Avernus's gardens are expeditions beyond the edges of current maps of artificial genetics" (*GOTS* 20).

Her characterization of Avernus's various experiments as "games," however, is more than a little patronizing (*GOTS* 20). We find the root of her condescension in her response to the polychine garden. This garden features one of Avernus's most intriguing creations, a population of artificial life somewhat similar to vacuum organisms. Unlike vacuum organisms, however, the polychines "can reproduce, and they can even exchange information" similar to DNA. They also "obey a limited set of self-organizing rules capable of generating new instructions, and, therefore, new properties and even new forms" (*GOTS* 157). This autopoietical capacity allows them to generate "unique and unpredictable solutions to a single

problem: how to survive and grow." Where Avernus is content to allow the polychines to evolve on their own, Sri is determined to analyze all the rules governing the polychines' behavior and manipulate those rules "to force them to produce predictable solutions" (158). She disapproves of the unpredictability in both gardens because she sees it as a sign of weakness or inferiority. She is interested solely in manipulating the stuff of life to produce a predictable utility.

Predictability and control are supremely important to Sri, not only with regard to the polychines but also to people. She points out that the polychine garden is analogous to the Outers, who hope that, "by rewriting their genomes, they could escape the limited range of destinies shaped by past contingencies in human history." By "contingencies," she refers to the flawed and inefficient body structures, particularly the brain, which emerged from the vagaries of natural selection. This is essentially the argument Katherine Hayles articulates in *How We Became Posthuman*: that the substrate – the physical and chemical make-up of the body and brain, which serve as the physical basis for the mind – has an enormous impact on thought patterns (Hayles xiv). The implication here is that a utopia is constrained by its utopians' mental capacity, which in turn is constrained by their physical morphology. For example, human bodies and brains that harbor survival mechanisms developed for an ancient hunter-gatherer culture may be unsuited for modern civilization: "because people no longer lived in the African savannah, many of the situations that triggered basic emotions had nothing to do with immediate survival, which meant that many human cultures and individuals exhibited heightened responses to situations that did not require heightened responses." Limiting fight-or-flight responses "by making them harder to trigger" and "enhanc[ing] emotions associated with higher cognitive functions," like *amae*, might contribute to a more harmonious modern society (*GOTS* 190). Sri approves of the Outers' attempts to do just that, but she distrusts the decentralized nature of this evolution as individuals and small groups freely experiment. Instead, by studying the Outers, and particularly Avernus's gardens, she hopes to "understand the breadth of their capabilities. And by understanding them, we can control them" (*GOTS* 160).

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It does not occur to Sri to consider the extent to which the Outers' decentralized freedom and playfulness have contributed to their creative and scientific successes.

Avernus is not Sri's polar opposite, as Brazilian diplomat Loc Ifrahim seems to believe. In his opinion, the polychines "are a game with no purpose or utility," and Sri is "attempting to control something that, by its very nature, cannot be controlled" (*GOTS* 163). If this were true, then there would be no point to gardening or utopianism. Instead, as illustrated in her conversation with Cash Baker, Avernus believes that humans can wield powerful influence over their surroundings, their societies, and themselves. The primary difference between Avernus and Sri is that Avernus believes it is neither possible nor desirable to employ perfect control. Far from being games "with no purpose or utility," the banner garden and the polychines explore life's abundant potential to combine the old in new ways to create new results. In her conversation with Cash Baker, Avernus acknowledges that these experiments are limited because they are confined to "[h]ermetic ecosystems perfectly circumscribed by their boundaries, unable to become anything other than what they already were. Fixed patterns. Complex, yes, sometimes. But fixed" (*GOTS* 311).[4] Earth's ecosystems are far more dynamic because they are much larger and more diverse than anything under a pressure dome on a moon. Because of this, the garden Avernus is making for Colonel Stamford might change in a hundred years to "a wild wood, or a briar patch, or a swamp," or any number of things (*GOTS* 311). She has no desire to attempt controlling the outcome, either; she only works to improve the here-and-now by making it "a little more beautiful," which will in turn provide the ingredients for future beautiful – but yet unknown – variations (*GOTS* 312). This philosophy leads to a utopianism that respects and even embraces contingency, which lives, like the polychines, in "an eternal yet ever-changing now" (*GOTS* 161).

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[4] Avernus betrays an "island" mindset here, however. Even her "bottle" ecosystems have permeable borders, which people and other objects can penetrate. It is more correct to say that these supposedly hermetic ecosystems have boundaries less easily penetrable than ecosystem boundaries on Earth.

Sri's posthuman clade, on the other hand, seeks to be exactly the kind of "hermetic" ecosystem that is "unable to become anything other than what [it] already [was]." True, Avernus's phenotype jungles are each based on a single genotype, but they are isolated little habitats created as part of a larger series of experiments in genetic engineering. Avernus never advocates this botanical model as the basis for an isolationist human society; on the contrary, she works before and after the Quiet War to bring about reconciliation and cooperation between Earth and the Outers. For example, she creates Deep Eddy, a fantastic, awe-inspiring set of habitats within Saturn's atmosphere, to be used freely by anyone in the Solar System as a safe venue to meet and share ideas. Sri, however, is a misanthropic genius who never understands or cares for other people. She hates the overcrowding on Earth, not out of compassion towards those affected but out of disgust for the animalistic mobs. Her fantasy early in *The Quiet War* is not a eutopian solution to their plight but rather a plague that would wipe out the majority of the population and leave the Earth to a eugenic, enlightened race of people: in short, "A utopia in which everyone was like her" (*QW* 241). She fulfills this wish via her posthuman clade, in which not only the people but indeed the entire ecosystem is like her, a grotesque mirror into which she can gaze endlessly at her own reflection.

This dynamic between Sri and Avernus points to the larger opposition of centralizing versus decentralizing forces within the ecosystem, specifically as they influence expressions of the utopian impulse within human societal networks. In chapter 4, we will examine these and other forces relating to network structure and dynamics.

CHAPTER 3

ENGINEERING NATURE

"Science does not rest on solid bedrock. The bold structure of its theories rises, as it were, above a swamp. It is like a building erected on piles. The piles are driven down from above into the swamp, but not down to any natural or 'given' base; and if we stop driving the piles deeper, it is not because we have reached firm ground. We simply stop when we are satisfied that the piles are firm enough to carry the structure, at least for the time being."

Sir Karl Popper, 1968, *The Logic of Scientific Discovery*

The title of this chapter refers to three separate but related concepts: the act of humans engineering nature (i.e., altering the physical ecosystems they inhabit); the tendency of humans to engineer their circumstances; and nature (perhaps capital-N Nature) that engineers. All three concepts are characteristic of a dynamic biosphere. As Avernus teaches, humans are a part of nature, and it is in our nature to improve upon our surroundings. Nature constructs us; we reconstruct it; we arrange and rearrange ourselves socially and behaviorally. This is the concept of mutual construction implicit in the nature continuum. But if we are exploring just what utopianism means in context of its embeddedness in nature, then several questions arise. For example, what is the relationship between the engineering that nature does and the engineering that humans do? Is there even a difference, given that humans are an integral part of nature? What principles can would-be utopians garner from this comparison?

McAuley addresses these questions with a number of extended analogies related to biome engineering, and particularly to the synthesis of soil. These analogies primarily occur in exposition related to the work of Brazilian subordinate Macy Minnot, McAuley's prominent

ecosystem engineer and budding gene wizard. The engineering principles that we can derive from these analogies are, according to McAuley's context, directly applicable to utopian engineering, as well as to network-building in general.

<center>3.1 Engineering Principles</center>

3.1.1 "Natural" Versus Directed Change

Undirected change, namely that which occurs "in nature"[5] without human help, is often slow to occur.[6] This is particularly true in the evolution of highly complex systems, such as soil. McAuley writes that, "In natural conditions on Earth, it took about four hundred years to produce a centimeter of topsoil; a thousand years to produce enough to support agriculture" (*QW* 68). This slow building process is especially problematic when the reverse – the erosion of topsoil – occurs quite rapidly in the post-Overturn megastorms. Even though the nations of Earth have largely confined themselves to self-sufficient arcologies, taking nothing from the surrounding land, the dust bowls and climate changes that accompany the loss of topsoil still threaten their water supplies and meager crops. They cannot afford to wait a thousand years for more topsoil to accumulate. Likewise, the Outers live on airless moons whose regoliths are not crop-ready. Therefore, to survive, both groups must make their own arable soils: human "interference" with "natural" processes becomes necessary.

3.1.2 A Complex Undertaking

Replicating in weeks or months what nature requires a thousand years to make requires a "major expenditure of effort" and skill. It is such a complex undertaking, in fact, that they need AIs – artificially intelligent computers – to "monitor and micromanage every stage of

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[5] In the last chapter, I defined "nature" as "everything that is" as opposed to "everything but Man" or "whatever happens without human interference." Unfortunately, there are no convenient terms to represent that which happens without human direction. In cases such as this, I will reluctantly use "nature" in the old, inaccurate sense for the sake of simplicity.
[6] There is a growing and compelling body of research examining the constructive influence of catastrophic, rapid change in the biosphere (see, for example, work by Luis and Walter Alvarez in 1980 and afterward), but most changes – particularly related to the build-up of resources – still appear to take relatively long periods of time, from the human point of view.

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the process" (*QW* 69). Even a relatively simple ecosystem is an "intricate game or puzzle in which everything affected everything else": "Plants competed for the nutrients and light; animals grazed on plants or preyed on other animals; microorganisms broke down dead organic material and recycled nitrogen and phosphorus and sulfur into forms that other organisms could use." So interconnected are the elements of an ecosystem that the addition or deletion of just one species will potentially change relationships throughout the web, with results that are not wholly predictable. This complexity increases "exponentially with the addition of each new species" (*QW* 41).

In making a system this complex work properly, it is important not merely to have the right ingredients but to put them together in the right amounts, in the right structure, and with the right timing. Soil, for example, is not just dirt; rather, it is a richly diverse ecosystem unto itself which possesses a "fractally" complex structure:

> Stratified and textured and dynamic, it supported a myriad complex chemical reactions that were still not completely understood, mediated by soil water and air moving through pore spaces that occupied up to fifty percent of soil by volume. Soil water also transported material through processes such as leaching, eluviation, illuviation and capillary action, and supported a rich and highly diverse biota – hundreds of varieties of soil bacteria of course, and cyanobacteria, microalgae, fungi, and protists, as well as nematodes and worms, and insects and other small arthropods – that recycled macro- and micro-nutrients, decomposed organic material, and mixed and transported and aerated mineral and organic components. (*QW* 68)

Here we see a huge number of network elements performing specialized jobs, all interconnected and reliant upon the activity of many other elements – and this is just the soil. The entire biome project is, of course, even more complex.

3.1.3 The Creative Vision

Even though the AIs are indispensable, there is a certain special something that they lack, for the process is "more like alchemy than chemistry" (*QW* 68). That special something is intuition. As such, a human being who can visualize the big picture and predict the implications of various network structures and actions is required. This is the role of a good ecosystem engineer. "Macy had the useful knack of being able to hold models of nutrient and energy flow in her head and examine them from every angle, visualizing their interlocking checks and balances, predicting how changes in one parameter would propagate through the system" (*QW* 40). The original project coordinator, the deceased Emmanuel Vargo, was even better at this than Macy: he had been able to "conduct the equivalent of two or three symphonies at once, with choirs and bells and thundering organs" (*QW* 41).

3.1.4 The Unpredictable

No matter how skilled the engineer or how sophisticated the technology, however, the unpredictable will always happen. Just adding or removing a single species from the network changes network relationships "in large and small ways that could not always be predicted" (*QW* 41). Other complications may also crop up, such as the *Skeletonema* problem in the Rainbow Bridge biome project. The biome crew's stock of *Skeletonema costatum*, a microscopic diatom that would inhabit the lake, initially fails to reproduce rapidly enough for the project to proceed on schedule. As a result, the team has to adjust the organism's phosphate uptake to prevent a cascading set of consequences that would likely result in the project's failure (*QW* 74). And this is just a single microorganism amongst hundreds in the small ecosystem, not to mention hundreds of larger organisms and non-biological factors such as wave machines and pressure levels. The many network elements, despite lacking the volitional capacity of an intelligent being (at least, that we are aware of), effectively have agency all their own, and they play a significant role in the network's function and dynamics.

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Macy and her team can create the basic systems, therefore, but once they set everything running, the biome finds its own equilibrium. The lake-bottom mud, for example, is "a self-organizing bioreactor that structured itself into microdomains within upper aerobic layers and lower anoxic layers" (*QW* 69). Since the results of this settling process are not always predictable, the team must continually test the results and make adjustments as necessary. Macy and her assistant "motored out to the reef in a skiff and took samples. On-the-spot DNA sampling suggested that most species of bacteria and microalgae in most of the mixes had flourished" (*QW* 70). Note the key word *most*. Since *all* of the network elements are necessary to the system's functionality, Macy and her assistants must discover what is inhibiting the success of certain species and determine how to counteract those problems. If they merely set everything in motion and then do nothing, the system will certainly find its own balance, but it may not be a balance that provides the desired utility to the human inhabitants.

3.1.5 The Problem of Speed

McAuley's characters may be able to engineer ecosystems much faster than nature, in some cases, but that speed comes with a price: there is less time for troubleshooting. In the thousand years it takes nature to build enough soil for agriculture, for example, small changes and additions occur gradually. With slow, incremental change, most perturbations to the system's equilibrium are relatively small, so the return to equilibrium (or progression to a new equilibrium state, as the case may be) is relatively quick. Even major perturbations and catastrophic reorganization are really no problem: to our knowledge, "nature" has no deadline and no blueprint for a desired outcome. All dynamics in the network are simply cause and effect. This is not the case in biome engineering. Macy and her team must complete the biome on a very strict schedule. One reason is certainly political in nature. The biome is a joint project between Earth and the Outers of Rainbow Bridge, Callisto, and the participants are eager to demonstrate that good will between these erstwhile antagonists can accomplish productive, life-affirming goals. Failing to deliver a completed biome by the scheduled opening ceremony would

reflect badly on the peace faction's much-watched utopian enterprise. The other reason, however, is ecological. Nature does not go from barren wasteland to verdant lake property in one year. Normally, a base (soil, microbiota, etc.) will slowly emerge, and then superstructures gradually build upon that foundation. The superstructures cannot survive without a strong base to support them. For example, an animal species cannot survive in a particular area without the presence of plant or animal species it can feed upon, and those food sources in turn rely upon other network elements, such as a certain degree of sunlight, rainfall, or nutrients in the soil. The biome team, therefore, is trying to proceed from base to higher and higher superstructures before each level's stability is ensured. Given the principle of unpredictability, problems will inevitably arise in construction, and those problems will "propagate through the system" with effects that sometimes threaten the desired outcome (*QW* 40). As with the *Skeletonema* problem mentioned in the previous section, significant, rapid changes to any network increase the risk of catastrophic reorganization.

3.1.6 Implications for Utopian Enterprise

Each of these principles of biome engineering is applicable to the development of a utopian enterprise, as follows:

- "Natural" versus directed change, and the problem of speed. Human societies are not always constructed according to a utopian vision. Instead, groupings of various types can arise as a matter of necessity, as with individuals that band together for survival, or as a matter of contingency, as when something that resembles a society emerges from the day-to-day execution of commerce. As individuals attempt to co-exist, conflicts arise and are resolved in an ad hoc fashion, perhaps with the evolution of informal customs and conventions, or with the development of actual laws and institutions on an as-needed basis. The size and complexity of such an ad hoc society will generally increase slowly over time as conflicts are resolved in such a way that allows persistent ties between larger and larger numbers of people. A utopian society, however, will be

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forged with some sort of particular unifying vision, purpose, or philosophy, including some idea of the desired outcome. This vision may be implemented all at once in a top-down fashion, as when the Three Powers Authority (TPA) takes control of the Outer System after the Quiet War. Alternatively, the driving actor(s) may roll out changes gradually or in a piecemeal fashion due to limiting factors in the physical and political environment, as with the century-long expansion and evolution of Outer society at large. As with physical ecosystems, rapid changes have a higher likelihood of producing catastrophic unintended consequences. From this point of view, an incremental, experimental approach to utopia-building seems to be indicated; however, there may be cases in which incremental change is ineffective due to entrenched power structures. In such cases, the revolution must be carefully planned, with as many network elements and uncertainties taken into account as possible to minimize the likelihood that the outcome will be drastically different from the objectives. In fact, this sort of careful planning is exactly what the Brazilian revolutionaries and their Outer advisors do; see Chapter 8 for more details.

- A complex undertaking, and the unpredictable. As every would-be utopian has surely discovered, dreaming up a utopia and making it happen are two very different things: they run into John Law's "sea of actants over which they have neither control nor mastery." Some network enrollees willingly assist with implementation; some resist; some just go about their business and neither help nor hinder the utopians, which may hinder by virtue of inertia. Physical resources necessary for implementation may turn out to be limited. No matter how detailed the utopian plans, additional elements will need to be hammered out as obstacles arise. These and other difficulties have great potential to derail or defeat the utopian vision. For example, Greater Brazil, the European Union, and the Pacific Community put a great deal of planning into the Quiet War itself, taking into account network elements as diverse as oxygen producing

systems, agriculture, the diverse governmental structures in the Outer System, the ideologies of individual Outer communities, and the psychology of key individual Outers. This careful planning, along with the fact that it is easier to destroy than to create, led to the rapid success of the Quiet War. They put far less planning into the war's aftermath, however, which proved their undoing. They planned simply to impose on the Outers the same system of governance which they themselves were accustomed to on Earth. Many of the Outers, however, refuse to cooperate, and eventually the TPA loses control of the situation. See Chapters 7 and 8 for more details.

- The creative vision. Any utopian enterprise has one or more driving actors who possess the vision for the desired outcome and work to implement it, in part by enrolling other actors and actants into the new network. Given the potential complexity and unpredictability of the new network, successful visionaries will be intelligent and knowledgeable about all dynamics related to the vision, as well as possessing the leadership skills necessary to secure cooperation. These qualities might be present in a single individual or distributed amongst a group of driving actors. Having these qualities will not guarantee success, but their lack will very likely produce failure. This is one of the reasons why Macy Minnot is such a key figure in the eventual peace agreement between Earth and the Outers. As an outsider wherever she goes and a talented biome engineer, she has the perspective necessary to determine what is needed to construct a new cooperative network that will remain stable, at least for a time.

Each of these principles will be evident in Part 3 as we analyze McAuley's various utopias and their interactions.

3.2 Irreversibility and Unrepeatability

Related to the above engineering principles but important enough to deserve separate treatment are the twin principles of irreversibility and unrepeatability:

- Irreversibility: Changes generally cannot be unmade. The effects may be prevented, mitigated, or removed, but at the very least, the present circumstances are different simply because a change was made and time has passed.

- Unrepeatability: A historical state cannot be perfectly reconstructed, nor can a network structure be perfectly replicated. The passage of time and/or an environment other than that of the original, no matter how similar, will make differences (perhaps significant ones) inevitable.

Macy Minnot, the famous Outer pioneer Abbie Jones, and spy clone Dave #8 illustrate these principles, which constitute important limitations on utopian enterprise within the ecosystem utopia model.

After she defects from Greater Brazil and takes refuge with the Jones-Truex-Bakaleinikoff clan, Macy struggles with the consequences of her unsought notoriety. Matriarch Abbie Jones advises her that "No one can go back to what they were in the before. Because there is no longer any before" (*QW* 235). Both Abbie and Macy have experienced hinge points that divide their lives "into two. Into the before and the after" (*QW* 234). As a result, life changes so drastically that there is no way to recapture the life they had before: "everything that happens afterward is different from everything that went before, because the person is never again the same" (*QW* 234). For Abbie Jones, the hinge point was a four-year solo voyage in which she travelled farther than any human had ever gone. She did not feel much different when she returned – only a bit strained from the loneliness – but "fame alone cut my life in two" (*QW* 234). In an attempt to recapture some anonymity, she, her husband, and a group of friends established a commune on Titania, Uranus's largest moon. Their isolation and distance from all supporting networks, however, doomed the settlement to an early death. Abbie eventually realized that the changes she experienced are permanent: "I was wrong to think that I could find a way back to the life I had had before I became famous" (*QW* 235). To have any chance of happiness, she had to embrace her new circumstances and set new goals accordingly. Macy

likewise endures a political crisis not of her own making, "a series of accidents," and by virtue of her survival and escape she becomes notorious throughout the Solar System (*QW* 235). Hunted by Brazilian agents and distrusted by the majority of Outers, she wanders the Outer System in a kind of despair. She is terribly homesick for the "hearthlight of the sun" and the wind, rain, and horizons of Earth (*GOTS* 93). She dreams of one day returning to her home, but with an increasing fear that it will not be possible. As long as she holds onto this lost hope, she cannot be happy with the Outers and is not free to "find out what [she has] become" (*QW* 236). It is not until she accepts her fate and begins building a life and family with Newt Jones that she begins truly feeling like an Outer herself.

Not everyone "has that advantage" of being able to "look back at the place where our lives changed," however (*QW* 236). Some, perhaps most people experience change more gradually. Dave #8, for example, experiences a series of smaller hinge points that put him on quite a different path from the one on which he began. As clones in one of Sri Hong-Owen's secret military projects for Greater Brazil, he and his brothers are given numbers rather than names, signifying their handlers' complete disregard for any humanity in the clones. Individuality is discouraged. Since their trainers have names, the brothers decide to give themselves a name as well – "Dave" – hence, Dave #8 and so on. Taught from birth to despise the Outers, they are tweaked to resemble the enemy and trained to be the perfect undercover spies for the Quiet War.

Like his brothers, Dave #8 believes wholeheartedly in his mission, but he also feels from an early age that there is something wrong with him, that he is somehow different, which he perceives as bad. This leads him to work ever harder to prove his loyalty to the cause. But then begins a string of transformative events in his life. The first occurs as a result of the Daves' first training expedition on the Moon's surface. They pair off in a survival version of capture the flag, in which Dave #8 nearly dies. On the way back, he reflects on the experience: "They followed the trail of their bootprints across the soft contours of the moonscape toward the

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shuttle, but the way back was not like the way forward. The short walk had changed them forever" (*QW* 136). It helps to drive home the very real personal dangers they will face, not only after embarking on their individual missions but also during the training period itself.

Later, Arvam Peixoto, one of Greater Brazil's military leaders, visits the training camp. To test the clones' readiness, he orders Father Solomon to call forward his best student. Father Solomon, thinking that Arvam means to kill the student, instead calls forward Dave #8, whom he personally dislikes. Recognizing Father Solomon's deception, Arvam coolly orders Dave #8 to kill his trainer. Hesitating only for a moment before his training kicks in, he easily dispatches the man. This event intensifies Dave #8's insecurity with a terrible irony: while his brothers admire him as the first to be blooded, he feels like even more of a fraud than before because he truly regrets killing Father Solomon. Being praised for his kill while inwardly vowing never to kill again throws him into a prolonged, silent religious crisis of guilt for not being the person he was created and trained to be. Neither Dave #8 nor the readers know whether any of his brothers experience similar struggles; if they do, they are as good at hiding it as he is. In his mind, his only hope for redemption is to perform his mission with excellence and punish the Outers for their blasphemy.

He does feel some respite while preparing for Quiet War deployment in the Outer System, however. He undergoes plastic surgery to give him a face different from his brothers, the face of Ken Shintaro, his new cover identity. This mask makes him feel for the first time that he can hide his internal differences from those around him. Rather than trying and failing to be just like his brothers, he can be Ken Shintaro, and any apparent deviations can be attributed to his cover identity: he can hide in the anonymity of difference.

As Ken Shintaro, ostensibly a young Outer on wanderjahr, he enters Paris, Dione, and begins engaging in the typical daily life of a Parisian Outer. Now separated from his brothers, he is surrounded by the enemy. His difference from them helps him to feel more like his brothers, a significant emotional relief after his prior worries. Since revealing any inkling of the predator

within would betray him to the Outers, he strives to appear as normal and harmless as possible. Working amicably with his neighbors to support the habitat is a completely new experience for Dave #8, who until now has known only his training to kill and destroy. He experiences brief moments of doubt as he begins to see his enemy as real people. Nevertheless, for most of his sojourn, during which he commits various acts of sabotage, he feels that the mask of Ken Shintaro is quite thin and could break at any time to reveal the fangs and remorseless violence of the killer.

One thing derails this reality: a young schizophrenic woman named Zi Lei. From their first meeting at the Permanent Peace Debate, Dave #8 is completely infatuated with her, though he does not recognize these feelings at first. He finds himself drawn more strongly by the day to seek out her company, her mental vulnerability arousing a fierce protective instinct within him. This new obsession leads to an accelerating series of choices that result in dramatic, irreversible change. He decides to betray Zi Lei to the authorities so that she will be safe in a prison camp when the invasion begins; he chooses not to kill an Outer who challenges him, which gives the Outer an opportunity to shoot and partially disable him; in trying to persuade Zi Lei that he only betrayed her in order to save her, he loses the opportunity to capture Avernus, Yuli, and Macy; and he is taken into custody by the Brazilian invasion force. At this point, he still has the opportunity to report a partially successful mission and return to his brothers to serve Greater Brazil. The changes he has undergone, however, particularly his obsession with Zi Lei, exert too strong a pull on him. He escapes from the Brazilian ship and spends the next three years traveling from moon to moon in search of her.

Taking on a new identity, that of a dead Outer named Felice Gottschalk, he now experiences Outer life not as a secret saboteur but as a man searching for his lost love in the aftermath of the Quiet War. Not only does he experience everyday life and cooperation with the Outers, but he is also the surprised recipient of great compassion and generosity from Outers

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who sympathize with his plight. When Dave #27 finally catches up to him and offers one last chance to return to the fold, Dave #8 realizes that there is no going back to his old life:

> How could the spy explain how he had been changed by working with the crew in Paris, by the companionable days spent with Karyl Mezhidov rolling across the dark plains of Iapetus, by sharing food and work and long conversations about nothing in particular with strangers? How could he explain that *he could never go home because he was no longer the person he had once been, before the war?* (*GOTS* 118, emphasis added)

This is not to say that Dave #8 literally *could not* go home at this point; he certainly could, for Dave #27 has urged him to do so. But were he to return to the violence and brainwashing of his childhood, he would not experience it as the virtually blank slate he was in the beginning; instead, he would constantly question his orders, and his newfound conscience would lead him to greater and greater resistance until he would ultimately go insane, kill those around him, or be killed himself as a traitor. Also, having experienced the companionship and freedom of the Outer way of life, he cannot fathom returning to the tyranny of the Moon. There is indeed no going back to the before.

The principles of irreversibility and unrepeatability are evident at the large-network scale, as well. Earth, for example, resists the green saints' attempts to return "the planet to a prelapsarian paradise": they do manage to create "a few garden spots" here and there, but those garden spots require "vast expenditures of energy and effort" to "reverse entropy and replicate and maintain a historical state." Moreover, once achieved, the results are fragile. When Cash Baker flies R&R resupply missions on Earth, he observes the futile results of a hundred years of remediation: "Dust storms extended the desert's edge east and south, erasing decades of R&R work. Fire ripped through ten thousand hectares of rewilded forest north of Bastrop" (*GOTS* 243). A mind-boggling investment of time and resources is wiped out in the blink of an eye because the green saints have tried to recapture a historical ecological state no longer

supportable in the present environment. Instead, as Daniel Botkin and other postmodern ecologists would assert, "The world must be free to find its own point of equilibrium," not a previous equilibrium point that is incompatible with present conditions (*QW* 152).

Similarly, Outer society is irrevocably changed by the Quiet War. For the previous hundred years, the Outers had been left in peace by an Earth struggling to survive the effects of the Overturn. With unlimited space and abundant resources, they were free to spread out as much as they liked; there was room for everyone to live as they wished, which prevented any major conflicts from arising. In essence, they believed they "had created a utopian bubble that had floated free of the incessant barbarities of human history," one that could endure forever in the pursuit of "every kind of art and scientific research." This belief, however, is a "delusion" born of their temporary isolation. The Quiet War teaches them just how vulnerable they have been to aggressors. Even once they regain their freedom, they cannot return to the life they led before: "From now on they would have to be ever vigilant against attack and ready to defend themselves, *with everything that entailed*," including fundamental changes to their governing structures, military capacity, and basic freedoms (*GOTS* 104, emphasis added).

Sri Hong-Owen takes the unrepeatability concept a step further and points out that, due to the influence of random chance, even the past could have happened differently: "If you were able to run the great pageant of life in reverse to some point in the past and set it going again, it would not play out in the same way. It would tell a different story. Reverse and replay it again, and yet another story would emerge" (*GOTS* 161). Ironically (or perhaps not), this truth is played out in book 3 of this series, *In the Mouth of the Whale*[7]. When Sri's original body dies en route to the Fomalhaut star system, her clade tries to resurrect her by creating a clone. Since a clone is merely a genetic double, lacking any of the original person's memories, they raise the new Sri in a virtual reality environment in which they try to duplicate the circumstances of her

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[7] *In the Mouth of the Whale* was published too late to be fully incorporated into this analysis, but this particular series of events helps to illustrate the principles of irreversibility and unrepeatability.

real childhood. The problem is that their information is incomplete, so they lack access to some potentially important formative experiences. Also, as Sri herself had said, random chance can have a significant impact on the outcome. The end result is not quite the same as Sri, though it turns out to be close enough for their purposes.

It should be pointed out that the cases cited in this section involve significant changes and significant passages of time, from the human point of view. There are certainly individual cases in which change can be entirely undone, such as when a customer returns a defective item for a refund. Even so, returning to the store and waiting in a customer service line expends time that might have been otherwise employed. The smaller the change and the shorter the period of time, the easier it is to roll back the effects of that change. When we apply these principles to large-network dynamics, however, we must consider that every network element, large and small, undergoes change, and those smaller changes accumulate over time. If it is difficult to reverse changes on the individual level, it must be more difficult, if not impossible, to reverse at the network level.

This is not to say that nothing from the past can be preserved or recaptured. There are two keys to successful replication of a network: extensive tailoring to the new environment and an implementation scheme designed to maximize cooperation from the existing networks. A perfect example of what *not* to do is the TPA's administration of the Outer system after the Quiet War, in which they try to transplant their hierarchical structures of governance onto the conquered Outers. That system had worked well on Earth for several reasons. First, it was implemented on a small scale at local levels, then gradually spread and evolved. Second, the people of Earth were in a state of desperation, grasping at any chance of survival. They were more than ready to relinquish freedoms in return for security. Third, they felt that their forebears had indeed done wrong by wrecking the environment, and their sense of religious guilt primed them to accept great penance in order to right a great wrong. All of these factors served as supporting actants for the tyrannical network that emerged. None of these actants are at play in

the Outer System, however. The TPA imposes an entirely new and unwelcome network on a group of societies accustomed to doing whatever they wanted. This is a no-fail recipe for the rebellion that follows.

The revolution in Greater Brazil, on the other hand, is much more successful. Alder Hong-Owen and his Outer advisors (including Avernus) craft a plan to gradually introduce and facilitate democratic practices and attitudes. They work hard for several years to build a base to support the advanced superstructures of democracy: they assemble a "horizontal, highly distributed organization" to support their mission (*GOTS* 308); they strategically distribute propaganda when the great families commit unpopular acts; they teach people about democracy and living in the wilderness; they commit highly popular terrorist acts; they plant a network of oases based on people trees so that people can survive in the wilderness; they debunk key pieces of propaganda that the government relies upon to maintain control; and so on. Two important themes emerge: they work, as Greater Brazil did in the Outer system, to soften key network nodes prior to launching the revolution, and they prepare the people and the environment to support the new democratic network. The new network itself is not an exact copy of the Outer system of government; instead, they have tailored it to fit the contingencies of the situation in Greater Brazil, as opposed to the Outers' situation when they first left Earth to build their "scientific utopias" (*GOTS* 192).

When we analyze a utopian enterprise, therefore, we must realize that the utopian outcomes depend upon the environment in which it is founded and operated, an environment composed of an array of actants that are not always obvious: historical events, cultural institutions, propaganda, speed and method of implementation, and so on. In Chapter 4, we will examine other factors that influence network structure and dynamics.

CHAPTER 4

NETWORK STRUCTURE AND DYNAMICS

In Chapters 2 and 3, we examined some of the important principles underpinning the ecosystem of utopias model, as elaborated by McAuley: the nature continuum, engineering principles related to utopian enterprise, and irreversibility/unrepeatability. As with all aspects of the ecosystem utopia, these concepts fall under the umbrella of network structure and dynamics; however, they are treated separately because they form much of network theory's base. In this chapter, we will examine some of the specific structures and methods of change relevant to analysis of McAuley's ecosystem of utopias. Although structure and dynamics are nominally separate in this chapter, it should be noted that any description of a network's structure is necessarily a snapshot or an approximation; the reality is much closer to a semiotic web. No network remains static for any length of time: it is in constant flux, however slow that flux may be. Likewise, the structure of a network and of its neighboring networks will necessarily affect its dynamics. Therefore, there will be some unavoidable crossover in the two sections.

4.1 Network Structure

4.1.1 Small and Large Networks

Networks come in all sizes and configurations, so obviously, to reduce the myriad possibilities to "small" versus "large" is a dramatic simplification, albeit a necessary one for the space available in this thesis. Real-world networks are extremely complex, so strengths and weaknesses cannot be categorized strictly by size; too many other factors are at play. However, we can make some general assertions that *tend* to apply to networks of a certain size. Small networks, for example, tend to be fragile. This is due to the relatively small number of supporting actants, which creates a major weakness: tiny margins of error due to low capacity

for backups. This makes the network extremely vulnerable to attrition and perturbations. The Free Outers, for example, live always on the precipice of disaster. Forced to flee from refuge to refuge after the Quiet War, they bleed resources and people they cannot afford to lose. The resulting shortages leave them with barely enough to survive, much less to stock up for emergencies; they certainly do not have enough to continue pursuing their utopian dreams: "Their dreams of exploring human limits, building cities on the moons of Uranus and Neptune, and expanding into the Kuiper Belt had been abandoned. Left behind with almost everything else when the Ghosts had evicted them from their home on Proteus" (*GOTS* 284).

Large networks tend to be more stable because the larger pool of supporting actants will form buffers against perturbations. Well-established networks may depend on many institutions (which form network nodes) for stability, in which case many or all of those institutions must be attacked in order to pose a serious threat. This is the case in the early stages of the Quiet War, during which Greater Brazil undermines the Outers' social, economic, and physical networks with sabotage and propaganda before committing to a full-scale assault.

4.1.2 Centralized and Decentralized Networks

A tightly-centralized network ties all of its key institutions into a very small number of nodes, perhaps even a single linchpin, a principle or belief or technology on which everything else in the society relies. This type of network is extremely vulnerable: attack the linchpin and the whole thing may collapse because the effects will propagate through the entire system via the dense network connections. The more network connections that are routed through the attacked node, the greater the effect on the rest of the network, as with the *Skeletonema* problem discussed in Chapter 3. In a large network, however, there will usually be more than one possible linchpin, such as the TPA's transportation network and their political and logistical support from Earth. Linchpins and other nodes may be weakened not only by deliberate attack but by decay from within, whether due to neglect or changing demographics or other factors. This will be discussed in further detail in the section on tidal shifts, later in this chapter.

This is why, even though centralized societies tend to be more efficient and decisive, decentralized societies generally have the advantage of broader load distribution. The Freedom Riders in Greater Brazil, for example, have a "horizontal and highly distributed" organization: their enemies cannot cut off the head of the snake because there *is* no head (*GOTS* 308). The Freedom Riders' earliest driving actors invest a great deal of time and effort in recruiting, not followers, but other motivated leaders. Every local leader and member is fully equipped with data, propaganda, survival techniques, sabotage techniques, and everything else required to advance the cause. Some direction is passed through the network from the initial driving actors, but for the most part, the group is composed of autonomous actors and subnetworks that can carry out the mission and continue recruiting, even if the founders or other leaders are neutralized. This structure limits the speed with which the entire group might be mobilized for a specific, synchronized action, but it buffers the network against crackdown efforts by the Brazilian government.

The pre-war Outers to some extent also establish buffers against the linchpin problem by creating multiple backups for all essential systems. In other words, all load-bearing nodes have at least one alternative. For example, if crops fail, they can fall back on basic CHON food produced by vacuum organisms and storable for long periods of time. If that crop failure threatens their oxygen-producing capability, they can produce oxygen through electrolysis of water, the equipment for which is already in place. Perhaps the most important buffer, however, is the distribution of survival skills. Most Outers live not in large cities but in tiny habitats. In such small communities, each person by necessity participates in work related to survival in the Outer System; the population is not large enough for the kind of specialization that leads to people having no idea where their energy, food, or clean water comes from. Even in the large cities, each person is required to spend several hours per week performing basic maintenance duties, such as farming or waste management. Thus, when many of the Outers scatter after the Quiet War, they are still able to survive despite lacking the time to plan – nearly any sized group

of Outers will contain the mixture of skills necessary for the group to survive. Therefore, even in the wake of a major perturbation like the Quiet War, the network can collapse and re-form with many of the same characteristics of its previous equilibrium state. The same is unlikely in a centralized, highly specialized society such as Greater Brazil.

4.1.3 Nested and Interlinked Networks

No network is monolithic. By definition, a network involves dynamic connections between multiple network elements. Since each actor is technically an actor-network, carrying around with it the various connections it has forged, we could say that a network of any appreciable size is composed of innumerable smaller networks – many more than one per actor and actant, since individuals can and do belong to multiple networks. Though true, this concept is not helpful to the analysis of a single utopia, much less an entire ecosystem of utopias: the data would be overwhelming. It *is* helpful to note, however, that a network is made up of smaller networks, which in turn may be made up of even smaller networks, and so on. Sometimes these networks are nested like a Chinese box, with a direct relationship extending from an umbrella network down through successively smaller levels, all the way to an individual actor or actant (Pascual 144). For example:

Greater Brazil
Green Saints
R&R Corps
Unit #533
Soil Crew
Macy Minnot
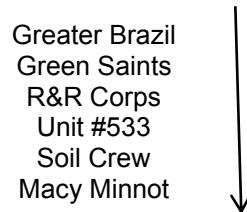
Figure 4.1 Example of a Nested Series of Networks

This vertical relationship is hierarchical, with each element being a member of the network above it and subject to its direction. Changes at one level may or may not impact other levels.

Other networks are interlinked, horizontally or otherwise, by the sharing of one or more network elements or nodes. Although some locations in such a network may involve hierarchies, they may also represent other kinds of interactions, such as mutualism, parasitism, and competition. These interlinked networks may be inside a single large network, as with Howard Baker's smuggling operation in Greater Brazil, or they may stretch across networks, as with the TPA. A metacommunity is a special type of internetwork in which "a set of local communities . . . are linked by dispersal," as opposed to a normal community, which is "a collection of species occupying a particular locality or habitat" (Holyoak 7). The green saints, which exist in all three of Earth's megastates, qualify as a metacommunity, as do the Outers' gene wizards and transportation network.

It is important to reiterate that the networks at issue do not consist only of "social stuff," for society is not separate from nature; instead, network connections form between all sorts of actors and actants, including elements of the physical and ideological environments. Thus, even though the Free Outers feel alone and hidden on Miranda and later Nephele, they are not in some hermetically sealed utopian bubble: they are surrounded by radiation, cosmic rays, and vacuum; they obtain food and energy from Nephele; and they are hurtling through space at unimaginable speeds as their little celestial body orbits the sun, the sun travels through the Milky Way, and Milky Way travels through intergalactic space. This is before we consider the possibility of other people locating them and interfering with their lives. Much of Part Three will be concerned with tracing the nested, interlinked, and entangled networks of McAuley's various utopias.

4.2 Network Dynamics

4.2.1 The Inevitable Collision of Interests

Due to any number of factors, a network's actors and actants will find their agendas in conflict at least occasionally, and a network of any appreciable size will experience continual conflict. This is not to say that these conflicts will necessarily threaten the stability or existence of the network; on the contrary, many types of conflict, such as competition in a free market, can lead to innovation and greater strength, or as Darwin would say, adaptation and survival of the fittest. This sort of positive conflict is foundational to Outer society:

> The Outer System's economy was driven by thousands of deals like this, and by trading in kudos, the elaborate system that tracked and indexed everyone's social esteem and contributions to the common good. At bottom, it was more like a game than a serious monetary system. Traders bluffed each other like poker players; some deadlocked deals were even resolved by a throw of the dice. (*QW* 248)

This passage depicts the fluidity and constant negotiations between parties whose goals often conflict, forcing adaptations and substitutions in order to keep the literal or figurative traffic moving and the society functioning.

This pattern of conflict and negotiation is evident in other areas, as well. Macy Minnot specifically compares it with political maneuvering: "Politics was a game too, and she was painfully aware that she was a naïve and inexperienced player who had only a vague idea of the rules. All she could do was declare her hand and play it by ear" (*QW* 249). It is a complicated game indeed, and not even the most experienced players know all of the "rules" because they are constantly being invented, negotiated, and broken. Even savvy politicians like Armand Nabuco and Arvam Peixoto are out-maneuvered or undone by chance events at more than one point in the story. Emmanuel Vargo's unsolved murder illustrates the multiplicity of competing agendas in action. Ursula Freye tells Macy:

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There are plenty of candidates [for Vargo's murder]. It could be someone in the Peixoto family who wants to diminish the considerable power of Oscar Finnegan Ramos. It could be a pro-war anti-Outer faction in one of the other Brazilian families, or the families of the Pacific Community or the European Union. Not to mention the numerous factions in the city states of the Outer colonies that want nothing at all to do with Earth. (*QW* 58)

This constant jockeying for position often represents competing utopian interests, whether at the network level, such as the radical greens versus the militants in Greater Brazil, or the individual level, such as Loc Ifrahim and Sri Hong-Owen, who compete for resources in the same niche as they attempt to carve out little utopias for themselves. Conflict, along with chance events (both "social" and "natural"), drives much of the change within and between networks.

This is not to say that conflict and competition are inevitably the same thing. Conflict is the friction that occurs when network elements collide, and that friction can be resolved by competition, cooperation, or disengagement. Some networks are founded upon ideologies that make one type of resolution more common than the other, and that type of resolution tends to characterize the network. Greater Brazil and the European Union, for example, have a bent for competition. Over time, this competition has generally resulted in the dominance of members of the great families over the rest of the population, as well as the dominance of certain individuals possessing charisma and political instinct. Non-family members jockey for positions at the lower levels: they compete to avoid punishment and to obtain favors that are meagerly doled out, if at all.

The Outer System is more mixed. In comparison with the Earth powers, they might seem to be characterized primarily by cooperation. In some senses, this is true. As discussed in Chapter 2, the Outer social system is engineered to structurally encourage the emotion *amae*, which is a sort of brotherly feeling amongst Outers. Outers in general are interested in keeping relations between the numerous little utopias harmonious and mutually beneficial. Competition,

however, is very important in their decentralized society, both in their free-market capitalism and their variations on the direct democracy. Political discussions and other types of decision-making are spirited and often antagonistic. At the 18th Conference on the Great Leap Up and Out, for example, Loc Ifrahim, the Brazilian diplomat, observes what seems to him an unproductive confusion:

> [T]he discussion groups were dismayingly chaotic. No chairman, no formal presentations, no panels of distinguished scholars, just unruly mobs sparring and squabbling around memo spaces. Someone might spin out an idea for a few minutes, then someone else would interrupt and embellish or demolish it, or start up an entirely new line of argument. More often than not, two or three people would be talking at once, trying to shout each other down. No consensus ever seemed to be reached on anything, everything was in flux, and in any case most of the business of the conference seemed to take place outside the timetabled discussions and workshops. (*QW* 270)

Loc concludes that the Outers' chaotic way of making decisions will hamper any sort of meaningful progress – forgetting, however, that they have developed innovative technologies in exactly this fashion for over a hundred years. In fact, at the 60th Conference on the Great Leap Up and Out near the end of *Gardens of the Sun*, we see that incredible progress has been made: several interstellar expeditions have either begun or are in the final planning stages, telescopic arrays observing extrasolar planets have improved their resolution over a thousandfold, and so on. Aside from their vulnerability to attack, this mixture of robust competition and cooperation seems to work very well for the Outers.

Regardless of the method by which the various conflicts are resolved, however, the bottom line is that networks are in a constant state of flux. This reinforces the notion that no utopia is truly static. To understand a utopia (or, for that matter, any network of any size) at a certain point in time or over a period of time requires analysis of its dynamics, originating both

within and without the utopia. The final category of dynamics we will examine in McAuley's utopias deals with slow versus rapid change: tidal shifts versus hinge points.

4.2.2 Tidal Shifts

The tidal shift, as implied by its name, is a type of slow, cumulative change. In a tidal shift, the character of a significant part of a large network is shifting – "significant" and "large" because this is an analogy to tides in the ocean, not to a little ripple in a pond. A significant proportion of individual network elements move, form new connections, new nodes, new networks, all roughly in the same direction.

McAuley refers to this as a "Prignogenic phase change," a reference to Ilya Prigogine's 1977 Nobel Prize-winning work in chemistry. Prigogine studied the dynamics at work when a substance changes phases, as with a solid changing to a liquid or a liquid to a gas. He observed that, as the substance is heated or cooled, it departs further and further from an equilibrium state, which creates a certain amount of apparently chaotic activity, or, according to the second law of thermodynamics, entropy. At the threshold temperature, there is a time during which both states (solid and liquid, or liquid and gas) are present in some combination, followed by a completed phase change. Prigogine's hypothesis was that the energy made available by way of entropy is utilized in a form of self-organization, of moving from lower energy, less complex structures to higher energy, more complex ones (Tucker).

Although there is some debate as to the validity of Prigogine's theory (see, for example, Shalizi), the basic idea holds up at least to a common-sense understanding of certain types of change. As it applies to McAuley's context, the phase change represents a series of gradual changes that build in volume and momentum until a tipping point is reached, analogous to the temperature threshold, a sort of critical mass or terminal velocity which makes the phase change more or less inevitable. This tipping point may proceed rapidly enough that it qualifies as a hinge point (see next section). Once the threshold is crossed, a massive reorganization takes place, after which the rate of change settles out and a new equilibrium point is reached.

See, for example, what is occurring with the young Outers before the Quiet War:

> For a hundred years, the Outer System settlements had been turned in on themselves, concentrating first on surviving in hostile and Spartan environments, then on establishing robust, durable ecosystems and economic and social mechanisms. But now they were *trembling on the brink of a profound social and cultural revolution*. A *Prignogenic phase change* driven by the eagerness of many young Outers to *cut loose* from the old, reactionary regimes of the city states on the moons of Jupiter and Saturn. To light out for new territory. (*QW* 105, emphasis added)

This "burgeoning frontier spirit" alone would qualify as a tidal shift, but a conflict inherent in their society's structure is also brewing. As a result of increased longevity, most of the resources required to support exploration are controlled by the grandparents and great-grandparents of these young people – generations who have done their share of pioneering and risk-taking and are now ready to settle down and build conservatively on what they have accomplished. This disconnect between generations is causing discord as increasing numbers of young Outers create lifestyles outside the mainstream and engage in "fierce and frequently divisive debates within the collectives and family trusts that owned most of the ships in the Outer System" regarding how those resources should be deployed. Even though these younger Outers would assuredly gain influence as the years go by, they "were too eager and too impatient to wait. Almost every sociopolitical model predicted breakout within a decade" – a "breakout" that would have created incredible upheaval in Outer society had the Quiet War not happened first (*QW* 105). Here, at the threshold of the breakout, we see both phases co-existing: traditional Outer society and the young radical Outers longing for freedom. There are several tidal shifts in McAuley's work that drive significant change in the ecosystem of utopias. We shall examine these in Section Three.

4.2.3 Hinge Points

       Hinge points are fairly straightforward: they are points in time in which sudden, significant change occurs. These changes can occur as the result of chance events, either in the physical ecosystem or in society, or as the result of conscious decisions. Since hinge points represent rapid, sudden, all-at-once change, their results may cause significant perturbations to the affected networks. The Overturn is one of the most significant hinge points in the history of McAuley's world. Although it technically comprises a series of environmental collapses – global warming, the evaporation of methane-laden ice in the Antarctic, and so on – this series of events happens rapidly enough, historically speaking, to cause a rapid collapse of all existing social and physical networks and a chaotic, destructive reorganization in the years that follow. Hinge points can occur on smaller scales, as well. Ursula Freye's decision to involve Macy Minnot in her investigation of Emmanuel Vargo's death, for example, leads to Macy's entanglement in Loc Ifrahim's machinations, her defection, and eventually her key role in the reconciliation of Earth and the Outer System.

       Hinge points can happen without any warning, leaving the affected actors with no option but to react. On the other hand, sometimes they approach with enough warning that the actors have time to plan their moves: they may attempt to instigate, hasten, slow, avert, or shift the hinge point. How actors respond to a given hinge point may have profound influence on the outcome. At a crucial turning point in *Gardens of the Sun*, for example, Loc Ifrahim gives a speech to the Free Outers about the importance of recognizing hinge points and acting to push events in the right direction:

> He said that this was a hinge point in history. The chains of power had been broken and reforged in Greater Brazil, and her people had gladly taken up the burden of their own destiny. . . . The Free Outers had been presented with the opportunity to take part in that great struggle. They could agree to accept the Pacific Community's invitation, take part in the great task of making history, and

help the people of Earth and the people of the Outer System reconcile their differences and forge a common future. Or they could refuse it, and relegate themselves and their children to the margins of human civilization and human history. (*GOTS* 347)

His speech falls, for the most part, on deaf ears: the Free Outers prefer to sit on the margins and wait to see what transpires. Macy, however, knows that Loc is right, and she decides to take independent action. As a result, she plays a critical role in defeating the Ghosts' attack and creating a new era of cooperation between Earth and Outers.

McAuley employs a chess metaphor throughout the two novels to symbolize hinge points (among other things). For example, when Dave #8 first learns the game, he is "fascinated by the way in which a few simple opening moves so quickly developed into a complex web of possibilities, how lines of power and influence switched in strange and unexpected configurations as the game developed" (*GOTS* 288). Each chess move represents a hinge point which simultaneously creates and destroys possible moves. As chess men are captured and arranged in defensive and offensive configurations, the "web of possibilities" contracts further and further until only one outcome remains – the defeat of one of the players. The chess board, however, is a type of closed ecosystem which, as we discussed in Chapter 2, does not fully represent the real world. In the real world, actors and networks may indeed find themselves in checkmate; with a board and chess pieces that are essentially infinite, however, a seemingly decided situation may yet be transformed with the entrance of unexpected players.

An interesting consequence of the chess metaphor is how it highlights the power of leverage. In general, an actor possesses the power to act in accordance with the size and configuration of its network; in some cases, however, even seemingly small, weak actors can have profound effects on the network, as when a pawn puts a king in check. When this happens, the effect is not produced entirely through the actor's own power but is augmented by a confluence of network elements that the actor can exploit. The savvy actor can use hinge

points to his or her advantage as a way to leverage an amount of power he or she could not ordinarily muster. The Ghosts, for example, draw their membership from the radical young Outers we discussed earlier in tidal shifts. These are young people who lack the resources and clout necessary to create their own idea of utopia. Together, however, under the leadership of the elusive Levi, they manipulate a series of hinge points in order to push history in a direction that serves their secret goals. In particular, they play a significant role in instigating the Quiet War. The war would have happened in any event, since the Earth powers were committed to it, but their efforts ensured that they were in place to take advantage of the chaos that ensued: "The confusion of the Quiet War had provided the Ghosts with the opportunity to steal ships, make their mass exodus from the moons of Jupiter and Saturn, and begin the next stage of their long-term plan to fulfill Levi's prophecies" (*GOTS* 234). By leapfrogging from hinge point to hinge point, they are able to accrue enough power and resources to make them a major power in the Outer System and, later, a dire threat to the rest of humanity. We will examine other such hinge points in Part Three.

<center>4.3 Conclusion</center>

Although the principles of the nature continuum, engineering, and network structure and dynamics which we have examined in Part Two do not represent all or even most of the precepts that might inform econet criticism, they do capture the essence of McAuley's social theories as they apply to the ecosystem utopia model. In Part Three, we will apply the concepts and methodology from Parts One and Two to McAuley's ecosystem of utopias. My goal is twofold: to demonstrate my fledgling methodology – econet criticism – and to illustrate the richness of McAuley's ecosystem utopia.

PART THREE

MCAULEY'S ECOSYSTEM OF UTOPIAS

CHAPTER 5

COLLAPSE AND RECOVERY (circa 2030 – 2200 A.D.)

5.1 The Overturn (circa 2030 – 2080 A.D.)

The Earth of McAuley's novels is our own post-apocalyptic near future. As do most science fiction writers, McAuley plays the "what if?" game, using current conditions to extrapolate possible outcomes. In this case, he asks what might happen to a world in which global warming fulfills all of the twentieth century's apocalyptic warnings. The first half of McAuley's twenty-first century brings climate change of increasing intensity, a tidal shift in the physical ecosystems of Earth as well as the social networks that depend on them for sustenance. To escape the uncertainties and privation of Earth, a group of scientists and wealthy patrons emigrates to the Moon and Mars, where they can create controlled, predictable habitats. Those remaining on Earth, however, find it increasingly difficult to maintain their accustomed lifestyles as the network base – crop yields, fresh water supplies, etc. – is significantly eroded. Numerous "brush-fire wars" are "fought over dwindling resources" during this period (*QW* 16).

Around 2070 A.D., as the tidal shift reaches its tipping (or hinge) point, "vast surges of methane released from Antarctic clathrates" lead to "runaway global warming" which "threatened to cause mass extinction on a global scale" (*QW* 16). This release of methane causes "massive perturbations in the heat engines that drove Earth's weather systems," which in turn further diminish food and water supplies, with devastating consequences throughout the network. This is the Overturn, the catastrophic reorganization of Earth's ecosystems. The results include "dead zones in the oceans, flooding along the shorelines of every continent,

deforested deserts of the Amazonian basin and Africa, vast and tumbled deserts of North America, ruined cities" (*QW* 15).

Up to that point, the Earth had been dominated by large nation-state networks (the United States, the European Union, China, Russia, etc.) characterized by a high degree of specialization: superstructures atop superstructures, all dependent upon a base (energy, staples, communication) that required global logistical support. Although this network is able to adapt to the gradual reduction of resources of the pre-Overturn years, it cannot bounce back from the "massive perturbations" of the Overturn. The network is irrevocably damaged, leaving the survivors no choice but to retrench. They must discover entirely new paradigms by which to construct their new networks in the wake of such radical change to the ecosystem.

This series of events creates two conditions that make the environment favorable to tyranny: a power vacuum and a panicked populace unsure how to survive in the new conditions. People in first-world countries have been accustomed to visiting the neighborhood market for their daily needs, filling prescriptions for easily-available medicines, swiping a credit card to fill the gas tank, turning on a faucet for clean water, and working in a career that has nothing to do with producing goods necessary for survival. When that way of life collapses, they are all too aware that survival, for most of them, means latching onto people who know what they are doing. They are ripe for exploitation, to which they are more than happy to submit as long as it means their children will eat.

Enter those happy to turn a disaster into profit: con men, pirates, and organized crime of every stripe. If there is one thing they believe in, it is the admonition attributed to Machiavelli: "Never waste the opportunities offered by a good crisis." Their opportunism, however, as distasteful as it may be, plays an important role in the survival of the human species, for despite their profit-taking (or perhaps because of it), they pave the way for the rebuilding of a stable civilization. We know little about the mad scramble for power in those days except for those who prove successful in the long term: those who, along with their descendants, become known as

the "great families." The winning strategy they employ is a combination of military and logistical competence along with a radical green agenda that promises the restoration of a wounded Earth. Such groups establish the beginnings of the three megastates that later dominate the planet: Greater Brazil, the European Union (EU), and the Pacific Community (PacCom).

McAuley provides little background on the EU and PacCom, but based on hints here and there, we can assume that their societies are structured in much the same way as Greater Brazil. The most likely reason for this similarity is their shared metacommunity of green saints, who form a global network with the shared goal of restoring Earth to a preindustrial state. We can safely assume that, in the wake of the Overturn, the peoples of Earth are terrified of further environmental degradation and eagerly support efforts to reverse the damage, regardless of the financial and political costs. Thus begins a global utopian enterprise: the salvation of Gaia and the purgation of Man's environmental sins.

At the core of that utopian enterprise is the alliance of the greens with the Catholic Church to form a new green variant on Christianity, one that worships Gaia alongside God and incorporates new green theology along with the old. This powerful alliance drives the rapid success of the new megastates. Much as Constantine's conversion aided the rapid spread of Christianity throughout the Roman Empire, this conversion of Christianity aids the rapid spread of the green saints' authority throughout the Christian world. This really is a stroke of genius on their part because with every other network in a shambles, the one network guaranteed to see at least a temporary strengthening during the Overturn is the Church, where frightened people seek answers, comfort, and help. It is always easier to modify an existing network than to build a new one from scratch, and this one comes primed with a functioning hierarchy and grassroots outreach. One can imagine the potency of a sermon preached to an overflowing sanctuary, with a message of hope for those willing to follow the green saints' guidance. With the support of the already-trusted clergy, the green saints have the benefit of a running start for their reforms.

Puzzling as it may be that the entire church hierarchy would accede to the heresy of adding to the scriptures, it is easy to imagine the clergy's concern: although suffering can bring people closer to God, a disaster of this magnitude may have been enough to persuade people that God had abandoned them or did not exist at all. Linking the Overturn to a religious sense of guilt by drawing upon Man's biblical dispensation to be good stewards of the Earth likely helps to stabilize the Church's influence in the post-Overturn years. This partnership, along with the people's willingness to do anything to ensure survival, helps to launch a major reorganization of society that conforms to deep ecological values, as detailed in Chapter 2: the quarantine of humans into "urban islands isolated like pockets of plague" and the absolute power of the green saints to commandeer resources for the re-greening of Earth (*QW* 240).

The great families handle the administrative side of things, and in return, they are able to skim plenty of resources for themselves. As the secular right hand of the green saints, the families are able to reinforce their positions of power via a form of feudalism in which conquered lands are given to family members to administer and stabilize, ostensibly to create safe zones for the R&R Corps to work. They do in fact accomplish heroic tasks of reclamation, but as a direct side effect, the families enjoy great financial benefit and comfort denied to the rest of humanity, who are crowded into the miserable arcologies. Nevertheless, legitimate progress seems to be made, which helps to reinforce the notion that the families and green saints are effective leaders. Success helps to justify ever greater demands on the people in terms of labor, resources, and reduced personal freedoms, sacrifices they are willing to make because they believe they are saving the world for their grandchildren.

Those who later become the Outers foresee these eventualities and choose to remove themselves from the situation. Rather than engage in a pitched battle of competing utopian philosophies, which they would almost certainly lose, they instead establish colonies on the Moon and Mars. They do not choose this new life for its ease: after all, creating fully-functioning

Table 5.1 Ecosystem of utopias emerging from the Overturn

	EARTH	OFF-EARTH PIONEERS	
		NEW ZEALAND	MOON / MARS
OBJECTIVES	Survive the aftermath of catastrophic climate change, including the Overturn.	Escape the worst of the effects of climate change (pre-Overturn).	Escape the catastrophic effects of the Overturn and create a new life off-Earth, free of tyranny from the nascent megastates.
ACTORS	Pirate families, criminal families, military groups, ecologists, ecological groups, masses just trying to survive.	Scientists, wealthy people.	Scientists, wealthy people; Avernus and other gene wizards.
ENVIRONMENT	Collapse of early 21st century nation-states due to catastrophic climate change; the Overturn; oil wars, droughts, megastorms, dust bowls, crop failures; masses of dying and desperate people; sense of chagrin and responsibility; utopian outlook - willing to sacrifice freedom for security / survival / healing the Earth.	NZ is one of the few places on Earth least-impacted by climate change; utopian outlook - scientists tend to approach problems as solvable with science; wealthy people are accustomed to getting what they want and being free to act as they wish.	All off-Earth environments present special problems: vacuum, cold, low gravity, radiation, no ecosystems in place to support humans. Socially, the pioneers are determined to have freedom and self-determination, and they're excited about starting a new phase in human history; utopian outlook – perfect opportunity to create an array of scientific utopias, to live and let live.
EXECUTION	The people's willingness to sacrifice freedom and desire to heal the Earth enables the ambitious and the unscrupulous to grab power on an unprecedented scale (formation of megastates); development of institutions to support ecological remediation projects: new	(No information given; presumably, they are doing research and making plans for moving off-Earth.)	Create enclosed habitats on the Moon (Athena) and on Mars; develop technologies that make life off-Earth more sustainable (vacuum organisms, genetic engineering of humans and all other living things, machinery, other

Table 5.1 – *Continued*

	green theology (mixture of Catholicism and Gaia worship), R&R Corps, military, ecological research, ecological data-gathering networks, green saints (with incredible power, authority, and latitude to implement "pharaonic projects").		technology, social systems, general operating procedures, safety procedures).
OUTCOMES	Successful coalition of the world into three megastates is ongoing; large swathes of territory are still yet to be conquered and are typically inhabited by marginal groups, like bandits and wildsiders; green saints extend their control over the populace and the Earth's ecosystems; large populations are squeezed into city-arcologies with miserable living conditions (but tolerate it because they believe it's necessary); tightly-centralized, authoritarian, hierarchical (feudal) regimes develop; R&R Corps units enjoy slow success, but their toil is often rewarded by the rapid destruction of their work by storms or wildfires, while elsewhere, nature seems to heal itself without help; gradually, life in the megastates stabilizes, which allows them to once again set their sights on those who left Earth.	This works well for a while, but they anticipate the escalating effects of the Overturn and recognize that NZ won't be a refuge for long; decide to move to the Moon and Mars, create their own, relatively stable, enclosed ecosystems that they can control.	This works for a time, but the new factions on Earth decide they want to take over. Wars: the Chinese Democratic Republic vs. Mars and other "tyrants" vs. the Moon; the surviving inhabitants of the Moon and Mars evacuate and move outward to colonize the moons of Jupiter and Saturn (see Chapter 5).

ecosystems in vacuum is not simple. Instead, one of their primary motivators from the earliest days of the diaspora is the quest for freedom, to find a "place" where they can be free from aggressors and tyrants (*GOTS* 110). This is a flawed goal, as we will see in Chapters 6, 7, and 9, but it sets the stage nonetheless for a proliferation of little utopias. Table 5.1, above, illustrates the diverging utopian interests of humankind at this juncture.

<u>5.2 Recovery and Exploration (circa 2080 – 2200 A.D.)</u>

5.2.1 Recovery on Earth

In the recovery period, which constitutes roughly the one hundred years following the Overturn, we see the chaotic mess settle into a new and uneasy equilibrium. As ecologists Gene E. Bormann and F. Herbert Likens observed in their experiments with clear-cutting forests, the early post-burn period is characterized by the highest degree of species diversity and network instability, followed later by lower diversity and higher stability as natural selection runs its course (Kingsland 226-7). Similarly, after the near-total collapse of Earth's civilizations, many tiny networks pop up as people band together for survival or, alternatively, exploit their fellow man's hardship for profit. Unsuccessful networks swirl right back out of existence or get gobbled up by more successful ones, which in their turn continue growing as they establish and strengthen their access to resources. As time goes on, diversity decreases and stability increases. Table 5.1, below, illustrates the major lines of stratification that develop in North and South America, the region nominally controlled by Greater Brazil.

Within the power structures of Greater Brazil, the two major sub-networks remain the families, who handle administrative and military matters, and the greens, who oversee remediation efforts.[8] These networks co-exist peacefully for the most part in this time period, for their goals are complementary and the network is structured to facilitate cooperation between

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[8] Although the members of the green faction are often family members, they are treated separately because their agenda is Gaia-centered, whereas the great families, in general, are focused on administration and politics. This is also why the greens are not strictly a sub-network of the great families. It is more accurate to say that there is significant overlap.

Table 5.2 Competing utopias in the former Americas

	GREATER BRAZIL		OUTSIDERS
	FAMILIES	GREENS	
OBJECTIVES	Maintain and increase power and wealth.	Heal Gaia; return it to a pre-industrial Edenic paradise.	Remain free and independent of control from the megastates.
ACTORS	Great families, descended from the pirates, criminals, and militaries that founded GB (some of whom are still alive and ruling, such as President Elspeth Peixoto and her husband Maximilian Peixoto).	Green saints (including Oscar Finnegan Ramos of the Peixoto family), ecologists, ecological teams.	Bandits, many varieties of wildsiders.
ENVIRONMENT	The population has grown accustomed to life in the city-arcologies, under the rule of the great families; enough time has passed that they have confidence in their rule, and not enough time has passed for them and their children to forget what it was like to fear for their survival; the families have made at least a show of sharing the suffering of the people, making sacrifices in times of privation; perceived danger from the unpredictable climate and from intermittent clashes with the PacCom, and proof that the green projects do bear some fruit, keep the people at least marginally content with their lot.	Slow successes in ecological remediation, along with the occasional setback due to storms and wildfires, lead to greater and greater time and resources devoted to this project; these circumstances are used to justify the granting of absolute power to the green saints.	Hostile, damaged environments, difficult to live in; constantly hunted by the military and on the defensive as Greater Brazil works to expand its borders by conquering the land these outsiders live in.

Table 5.2 - *Continued*

EXECUTION	The military spends time and resources conquering new lands (justified by the "need" to heal the land), sometimes as much as ten years of fierce fighting against bandits and wildsiders for a single swathe of land (such as the area around Lake Champlain, where Macy's R&R Corps is deployed).	The green saints are linked in real time to all sorts of global and local ecological monitors for such things as ocean temperature and salinity, air temperature at various locations and altitudes, species population assessments, etc.; they have extremely sophisticated computer tech (including AI) to aid in analysis and planning; they have absolute power and discretion to direct any and all assets of a family or of the entire nation to perform any project they see fit, even if it were to literally move a mountain.	Many of these groups tend to be nomadic, moving from place to place in order to make use of scarce resources and to evade conquering forces; often in possession of sophisticated weaponry of unspecified origin, which makes them challenging marks indeed.
OUTCOMES	The constant military action, as Loc Ifrahim says later (in *GOTS*), makes for a strong military and a strong military-industrial complex; it also makes it possible later for militant factions to take control, both here and in the EU; the families are strengthened, but as new generations arise, the dedication of family members to at least the appearance of fairness towards the people erodes, and the younger generations chafe under the control of their long-lived elders; non-family members, who are "owned" by families and have little say in	The green saints, such as Oscar Finnegan Ramos, grow older and more set in their ways, and more removed from society as they focus on their supposed holy duty; they see this duty as a penance, something that is to be done no matter what the sacrifice, and with no consideration at all for the consequences to humans (consistent with aspects of the deep ecology movement today); this is a philosophy that becomes less and less palatable to those who must live in miserable conditions in the city-arcologies; the militant factions in the families begin to see the green saints as obstacles to their goals, since they are in competition for the nation's	They are often able to hold out for significant periods of time against the Brazilian military (ten years, in the case of Lake Champlain); this is a testament to the effectiveness of a guerrilla army against a traditional army whose supply lines are long and fragile.

Table 5.2 - *Continued*

	how to live their lives and direct their careers, are becoming disaffected (tidal shifts).	resources (and the green saints tend to be in favor of peace with the Outers).	

them. The green saints, for example, are always members of the great families, whether by birth or adoption, so they are loyal due to blood ties or gratitude. Likewise, the driving actors within the great families recognize that their credibility and authority depend largely on the success or perceived success of the green saints, along, of course, with the sense of religious obligation that keeps the populace in line.

The outsiders are an interesting patchwork of nonconformists about whom we have very little information. Most of the narrative concerning them comes from the perspective of characters whose information is filtered by Brazilian propaganda. The dominant impression is of a ragtag group of criminals who inexplicably fight against the righteous cause of healing the Earth and must be brought under the control of the Brazilian state. We get conflicting images of bandits armed with smart missiles on the one hand, and on the other, savage wildsiders who file their teeth to points and build shrines of human skulls (*QW* 33, *GOTS* 219). At no time, however, are they admitted to be a serious threat to Greater Brazil: they are exactly enough of a menace to justify significant military spending and heated patriotic rhetoric against the faceless Other. The outsiders, therefore, join the ravaged environment as factors that unify the populace under the discipline of the ruling regime. These two strands of propaganda are important actants in the network, as will become more evident in Chapters 7 and 8 when that propaganda is counteracted and eroded.

Some of these outsiders are oddly well-armed and effective for insignificant groups supposedly cut off from all supporting networks. Some have access to smart RPGs and are able to hold off the Brazilian military for as long as ten years (*QW* 33). Although it is not stated

outright, there are hints that some of these marginal groups are being armed by another power, mostly likely the Pacific Community. If this is the case, the strategy aligns with what Loc Ifrahim says about foreign relations: "Machiavelli taught us long ago that if you want to control a territory, you support the weaker powers in it without increasing their strength, and crush the strongest" (*GOTS* 268). If this is, in fact, what the PacCom is doing, they are arming the weaker powers – the outsiders – in such a way that the outsiders do not win, but merely hold out longer than they otherwise would have. As a result, the Brazilians are forced to expend additional resources and time to conquer territories in the Americas. This slows their growth and limits their ability to commit resources to other projects, such as war with the PacCom over who owns the Hawaiian islands (*GOTS* 18). At this point in the story, it is not clear whether the outsiders will remain the eternal Others who supply convenient propaganda points, become throwbacks to the past who die out as Greater Brazil devours the rest of the Americas, or become a pool of potential energy to fuel major change. In Chapter 8, we will see them become allies of the Freedom Riders in their quest for revolution.

5.2.2 Interplanetary War

As the Earth powers bring the post-Overturn political and environmental turmoil under control, they turn their attention to the expatriates on the Moon and Mars. This is another aspect of the ecosystem of utopias that is only sketchily revealed: we do not know, for example, what series of events leads to the deterioration of Earth/off-Earth relations. We do know that many Earthers resent that the migrants take a significant disproportion of scientific expertise and wealth with them off-planet, and they feel entitled to recapture what was lost, supposedly for the benefit of Gaia. Those who left have no intention of submitting to anyone's rule, however. Open conflict breaks out around 2090 A.D. and drags on for nearly thirty years, intensifying as rumors abound (possibly the result of black propaganda) that the Martians plan to launch an asteroid or comet at the Earth. In the end, the Chinese Democratic Republic (one of the nations later folded into the Pacific Community) launches a devastating surprise attack in which every Martian

habitat is destroyed. Unwilling to risk such genocide themselves, the inhabitants of the Moon flee to the Outer System and colonize the moons of Jupiter and Saturn, which at this period are beyond the practical reach of Earth.

Despite our incomplete information about this series of events, it is nonetheless critical to the dynamics of the ecosystem of utopias. First, it leads to a century-long rift between the two segments of humanity. One of the most serious side effects of this rift is the growing ignorance each side has about the other. It is easier to despise a faceless, distant Other who can strike at any moment, who may employ mad scientists hunkered down in secret labs to create terrifying new weapons (which, to our knowledge, the Earth powers do and the Outers do not). This hearkens back to Avernus's admonition regarding the continuum of humanity, discussed in Chapter 2: destroying the seeming Other farthest from you eventually leads to self-destruction. The long separation also precludes the effects of mutual construction between the two groups: they evolve in completely different directions, each uninfluenced by the other (except, of course, for the *threat* of the other). This increases the potential for conflict, especially regarding the Outers' many posthuman alterations which, sprung on Earthers all at once rather than a little at a time, contribute to the sense that they have become estranged from humanity. A sadder consequence of the rift is the lost opportunity for cooperation. The Outers develop incredible new technologies and protocols for surviving in hostile environments that could have helped ease the post-Overturn period, save lives, and make life in the arcologies more bearable – even make it possible for people to live out in the wild. They could certainly have helped the R&R Corps and green saints improve their approach to re-wilding the Earth.

There are positive aspects to this rift, as well. The trend on Earth is toward centralized, authoritarian societies; more than likely, anything short of a complete break with Earth would have resulted in ongoing wars for control or the pioneers' submission to Earth's hegemony. At the very least, philosophical differences with Earth might have stifled the Outers' joyful experimentation with posthumanity, systems of government, lifestyles, and habitat creation. The

clean break enables the Outers to turn their faces toward the future and engage in one hundred years of utopian creativity and freedom.

5.2.3 Colonizing the Outer System

Determined, like the early Americans, to be free of all types of tyranny, the Outers resolve to live the good life in the Outer System. In their view, "there's room enough for a hundred different ways of life out here" and anyone is free to create his or her own utopia (*GOTS* 266). The question is how to ensure harmony amongst these various and sometimes conflicting utopias. As a group composed largely of scientists, they approach the problem scientifically by designing an overall system conducive to freedom within which individuals and groups can carve out any way of life they choose.

The overall system creates commonalities that foster a sense of brotherhood and cooperation among all Outers, despite the sometimes significant differences in governance and lifestyle. They create several metacommunities and utopian nexuses that serve as pillars of Outer society, key network nodes that form a stable structure. The very big caveat, of course, is that this network is stable *at this period*, *with this generation of Outers*, and *in the absence of aggressors*. It is a golden age that cannot last, as we will see in Chapters 6 and 7.

The gene wizards are extremely important in these early years. The human body is ill-suited to life in space, and without modifications to the body or the environment, any colonies would be short-lived. Fortunately, the Outers number many talented geneticists in their ranks, the best of whom – the gene wizards – are geniuses who not only perform apparent miracles of science but have creative utopian visions of their own. The greatest of these is Avernus, whose philosophies we introduced in Chapter 2. Born "Barbara Reiner" on Earth before the Overturn, she names herself after a volcano in Italy as a symbol of her life's work. Avernus the volcano spews fumes so toxic that any birds flying too closely will drop dead, hence the name, which means "no birds." Avernus the gene wizard does the reverse: she takes environments hostile to human life (recall McAuley's comparison of Outers to birds) and transforms them into miniature

gardens of Eden (*GOTS* 59). For this, she is revered by all Outers as their Einstein or Darwin; her work and her legend help to bind the Outers together in one of the closest emotions they have to patriotism.

Avernus invents many of the genetic tweaks that adapt the human body to life in space, as mentioned in Chapter 2, as well as innumerable modifications to flora and fauna to make them more suitable to small, enclosed habitats, low gravity, and artificial light. She also invents vacuum organisms, a type of semi-organic nanotechnology that can be grown in vacuum. It is essentially a new taxonomic kingdom straddling the border between plant life and technology, encompassing a wide variety of species tailored to specific moons and specific desired products. These vacuum organisms generally work as a form of micro-mining for trace commodities scattered throughout a moon's regolith, beyond the reach of traditional mining methods. Perhaps the most important variety is that which produces CHON food, a sort of subsistence manna composed of carbon, hydrogen, oxygen, and nitrogen. This food can be stored in vacuum indefinitely and used as a backup in case of crop failures. Avernus works tirelessly to make life in the Outer System possible in the first place, and then to make it easier so that the Outers can concentrate on activities other than mere survival – i.e., whatever they think will create the good life for themselves. Her ecosystem packages, which are proven useful and stable, are used throughout the Outer System.

Another crucial node of the Outer network is their decentralized communication system, similar to our internet. The Net creates not only a sense of community between the Jupiter and Saturn systems but also a vigorous free marketplace of ideas. Subscribing to Stewart Brand's admonition that "information wants to be free," the Outers post their ideas, innovations, blueprints, diagrams, and all other intellectual workproduct in a utopian nexus they call the Library of the Commons, to be used freely by all who wish. There is no monetary profit motive as such, since they do not have intellectual property, copyright, or patent laws, but they do have

Table 5.3 Outer society in general

	OUTER SYSTEM (in general)
OBJECTIVES	Create an array of loosely-affiliated scientific utopias independent of Earth's powers; explore new ways of living.
ACTORS	Scientists, gene wizards (greatest of whom is Avernus), etc. – now dubbed "Outers," truly separate from and evolving away from those on Earth, physically, socially, culturally, technologically, and ideologically.
ENVIRONMENT	All off-Earth environments present special problems: vacuum, cold, low gravity, radiation, no ecosystems in place to support humans; socially, the pioneers are determined to have freedom and self-determination, and they're excited about starting a new phase in human history; utopian outlook – perfect opportunity to create an array of scientific utopias, to live and let live.
EXECUTION	Create enclosed habitats on the moons of Jupiter and Saturn; develop technologies that make life off-Earth more sustainable (vacuum organisms, genetic engineering of humans and all other living things, machinery, other technology, social systems, general operating procedures, safety procedures); commonalities: various forms of direct democracy, shared technologies (vacuum organisms, etc.), transportation systems, interplanetary internet, Library of the Commons (free-flowing information), economic system – kudos, wanderjahr, *amae*.
OUTCOMES	This system flourishes for over a hundred years; however, their open society proves to be vulnerable to aggressors; also, a paradigm-threatening tidal shift is developing amongst the younger generations, who lack the resources to forge their own utopian dreams because the long-living pioneering generation controls most of the resources and has most of the kudos (see Chapter 6).

what seems a powerful incentive in the form of "kudos," which function as a secondary economic system in Outer society.

Although McAuley does not explain how kudos are earned, it seems that they work much as "likes" on Facebook. For example, a person writes and produces a play, and the video is streamed to the Net. The play is extremely popular, and those who like it give kudos. The playwright can then spend the kudos just like money. The idea is to create incentives for people to do things that benefit society, beyond just marketable goods and services, while keeping the dissemination of those ideas free and open. It also rewards people for feats of heroism and

other admirable acts. The kudos system obviously has great potential for abuse, since it costs the kudos-givers nothing; there is no mechanism to guarantee that kudos are awarded on the basis of merit rather than popularity or self-dealing. On the other hand, excessive generosity with kudos would reduce their value on the free market and simply increase the kudos-price of each good or service. At any rate, McAuley portrays this as a well-functioning system, which implies that he sees Outer society as conducive to good faith and conscientious behavior. This free sharing of information and scientific/technological innovations contributes to the Outers' rapid success in colonizing the Jupiter and Saturn systems, as well as a renaissance in the humanities.

The next important node in Outer society is the practice of wanderjahr, in which a young person who has attained majority (about 15 years old) leaves his or her home and travels the Outer System for a few years. The typical Outer on wanderjahr visits several different habitats, perhaps on more than one moon, sometimes taking a job, sometimes just living off of subsistence credit, making new friends, learning other types of Outer societies and cultures, having fun, and generally deciding what kind of person he or she wants to become. This practice has several important benefits for the individual. One, it gives the young person an outlet for adolescent restlessness and the itch to take risks. Two, it helps to develop an adult identity separate from his or her parents. This is an important safety valve, particularly for those very small habitats, such as East of Eden, which may prove stifling to a young person eager for variety. They can get out and see the world, so to speak, to gain a broader perspective than their own little birth home. It also encourages self-reliance, a quality that Outer society does foster in children but which cannot be perfected when parents are still on hand to bail the young person out of difficulties.

There are some important network-level benefits to wanderjahr, as well. The most pressing need is to get young people circulating amongst the habitats in order to mix up the gene pools and prevent inbreeding, a real problem with so many tiny, family- or tribe-dominated

habitats. It can also mitigate ideological inbreeding to some extent; however, young people are likely to choose a new home because its inhabitants share that young person's outlook and values. Nevertheless, the broadening of perspective gained through wanderjahr helps to create a network of fairly cosmopolitan societies, even those that are tiny and relatively isolated. This is the Outer equivalent to today's "global citizen," who, in addition to past and present homes, feels kinship and loyalty to many different places. Wanderjahr is thus an important contributor to peace and cooperation within the network.

A number of other actants are similarly important to Outer society. *Amae*, for example, which was introduced in Chapter 2, is a sort of spirit of brotherhood amongst Outers which is created via wanderjahr, the Net, certain genetic tweaks, and an array of cultural checks and balances that are mostly hinted at in the text. Also, despite the many varieties of cultural and governmental practice, the Outers share a commitment to democratic decision-making: most individual habitats practice direct democracy, some for major decisions, some for all decisions. Rainbow Bridge, Callisto, for example, practices rigorous grassroots polling on anything and everything. Poll results can and do affect decisions such as the design of an island in the biome project. Everyone is literally in everyone else's business, whether in person or via tiny observation drones; the only place where privacy is ensured is in the Free Zone. The democratic process here is continuous and organic. By contrast, the Jones-Truex-Bakaleinikoff clan engages in formal secret voting for important decisions, but clan elders, particularly Abbie Jones, make the day-to-day decisions. Nevertheless, there is a sense throughout the Outer System that each person has a right to participate in decision-making and to express his or her opinions freely. Finally, there is no central decision-making body for all Outers. All decisions are made on the individual, group, or habitat level, and no habitat's decisions are binding upon any other habitat. This preserves the sense of each habitat's and individual's sovereignty and prevents the sense of any particular habitat taking precedence over the others; they are all equal, and they take pride in that equality.

5.2.4 Outer Utopian Nexuses

The Outers' decentralized society lends itself to a relatively high percentage of fledgling utopian enterprises and utopian nexuses, particularly at this early period in their history. To return to the clear-cutting analogy taken from Bormann and Likens, the Outers are in a period of high diversity and experimentation following a major network collapse and reorganization. Two examples will help to illustrate the potential energy in these utopian nexuses. The first is the recurring Conference on the Great Leap Up and Out. We see two of these in the books: the Eighteenth, shortly before the Quiet War, and the Sixtieth, about thirty-three years later. The nebulous objective of the conference is to bring people together who are working on various pursuits related to venturing outside of the Solar System. As described in Chapter 4, this is a totally decentralized process with a tenuous schedule and no agendas or chairmen or prepared presentations. No credentials or peer review are required for participation. Anything at all can happen, and sometimes serendipity alone brings fruitful ideas together. This environment fosters a free and creative flow of ideas.

The other utopian nexus worth mentioning at this point is Deep Eddy, a remarkable gift from Avernus to all of humanity. It is a series of little floating gardens, or "reefs," in Saturn's water belt. The atmospheric pressure at that level is too great for even modified human beings to survive, but they can experience the "splendid view" – "a thousand kilometers in every direction" – by inhabiting an avatar via virtual reality. She makes the address and avatar protocols freely available to anyone who wishes to visit, "Even people from Earth. *Especially* people from Earth," because "I want them to understand that there is nothing here but my little gardens, and the planet's wild beauty" (*QW* 253-5). Deep Eddy can serve as a safe place for all branches of humanity to visit and contemplate together, and perhaps to find common ground. It is simultaneously a place and a no-place encapsulating her overall utopian enterprise of fostering peace and cooperation for all humankind, an ambitious goal even for such a prodigious genius as Avernus. She is an optimist who sees humanity progressing ever upward,

constantly improving and moving toward higher states of being. Her modus operandi is to invent marvels of science to support this vision, then throw it out there for people to use freely. She makes no attempt to control the use of these inventions: she loves her work and she likes to help people, and once the work is complete, it is a gift to others. Deep Eddy is a utopian nexus with great potential, a place where better futures can be worked out a little at a time, negotiated piece by piece.

In Chapter 6, we will examine individual Outer habitats in more detail and look at some of the structural flaws and dynamics that contribute to major changes in Outer society, including tidal shifts from within and vulnerability to aggression from without. We will also look at some of the brewing conflicts within Earth societies.

CHAPTER 6

THE QUIET WAR (circa 2200 – 2221)

Whereas Chapter 5 deals with historical eras before *The Quiet War* begins, Chapters 6, 7, and 8 deal with the main storyline. As a result, there is much more material to analyze: an exhaustive anatomy of McAuley's ecosystem of utopias could fill hundreds of pages. In lieu of a quixotic attempt at thoroughness, in the following chapters I will sketch the most important networks and their major moves, then zoom in to a few representative utopian enterprises and nexuses. This chapter focuses on the run-up and execution of the Quiet War. We will pick apart some of the tangled sub-networks within those introduced in Chapter 5 to see how a variety of conflicting utopian enterprises drives mutual construction and major change within and between networks.

6.1 The Pre-War Period

6.1.1 Earth's Ecosystem of Utopias

Up to this time, the driving actors within the leadership of Earth's three megastates, Greater Brazil, the European Union, and the Pacific Community, are all part of a loosely-affiliated metacommunity that is interested in peace with the Outers. For example, President Elspeth Peixoto's husband, Maximilian Peixoto, establishes the first embassies in the Outer System around 2188 A.D., about 33 years before the Quiet War. Later, Peixoto, Valjean Couperin of the European Union, the green saint Oscar Finnegan Ramos, and a number of other influential leaders collaborate with the Outers of Rainbow Bridge, Callisto, to plan the construction of a biome near Rainbow Bridge. This project, in which Earthers and Outers work side-by-side, is a utopian enterprise meant to foster good faith and cooperation between the estranged branches of humanity.

A tidal shift in the halls of power is taking place, however. A shadowy network of militants within Greater Brazil and the EU is executing a long-term plan to seize power in both countries, a plan which includes the assassination of key peace initiative supporters and their replacement with hawks. This is a war of competing utopian viewpoints that many in the peace movement do not even realize is taking place. While the peace supporters embrace a philosophy of cooperation, altruism, and self-determination, the hawks are strictly imperialist. Some of those see it as the rightful conquest of the weak by the fit; others are religiously opposed to the Outers' posthumanity; others, believing the Outers will inevitably attack, want to make a preemptive strike; yet others are committed to the philosophy of an efficient, centralized state that gathers resources to itself to make the state ever stronger. These groups are able to unite based on a foundational utopian conflict with the peace faction. Arvam Peixoto explains: "You see the future as a rising curve. Always improving. . . . But other people, they see the future as a plane. Horizontal. Spreading out. A process of consolidation. That's what this is all about. The horizontal versus the vertical. True humans versus dangerous fanatics who are creating monsters out of their children" (*QW* 27). Here, the conflict is cast as conservative centralization versus liberal decentralization, and that is common ground enough for the time being to bind the various factions together in one enterprise. For now, these uneasy allies engage in a political chess game that is quite effective against the naïve doves. Since their objectives and desired outcomes are at odds, however, it is a temporary truce at best. As we will see in Chapter 7, the faction begins unraveling in the post-war period.

A key actant in building this militant network is the fast-fusion motor. A brief history of its development and use as a bargaining piece is illustrative of the hawks' strategy, as well as the many different networks, each with its own utopian objectives, tangled up in this issue. The latter takes us all the way back to Sri Hong-Owen's early training. Even as a child, her genius for science is clear, but as a commoner without even a drop of great-family blood, her prospects are limited. Her relentless persistence is rewarded, however, when an innovative research

project of hers catches the attention of the Peixoto family's green saint, Oscar Finnegan Ramos. He awards her with a scholarship that launches her career. She eventually becomes his most talented protégé, which opens up her access to the Peixoto power elite. Over the years, she cultivates a network of people she thinks might be useful to her, who might be willing to authorize projects, funding, travel permits, and so on.

As discussed in Chapter 2, she idolizes Avernus, the Outers' greatest gene wizard, and simultaneously wants to best her. Everything she does, including her careful alliances in the Peixoto family, is calculated to advance this goal. A remorseless sociopath, she lets nothing, neither sentiment nor ethical quandaries, get in the way of her goals. Thus, although she is grateful to Oscar for his teachings and the opportunities he has given her, she is impatient with what she sees as a crippling and nonsensical system of ethics. She applauds his support of the peace initiative early on, not because she agrees with his philosophical position but because she sees it as a good strategy for insinuating themselves into the Outers' networks. She believes it is supremely important that Greater Brazil use any means necessary to gain control over the Outers and their discoveries – not for any moral purpose but because it would be a shame to waste the opportunity to control such a resource. When supporting peace later becomes a political liability, she turns on Oscar, assassinating him and throwing in her lot with Arvam Peixoto and the hawks.

Even before that, she hedges her bets by taking every opportunity to do work that may gain her power, resources, and fame. She becomes the key scientist for the hawks' major research and development efforts, such as the J-2 singleship program. Some of this work pushes the ethical envelope; some, such as the "Dave" clones and the superbright program, is astoundingly unethical, which is why it is kept top secret, hidden even from Oscar. The Daves had been "cut to resemble the enemy, treated with the same gene therapies, given the same metabolic tweaks" – the perfect saboteurs, "weapons to be used against the Outers" (*QW* 11, 163). The superbrights were cut "from human embryos . . . adding to the mix a form of low-scale

autism so that, using behavioral cues, the superbrights could . . . work with intense concentration on problems set them by their wranglers" (*QW* 160). These superbrights are the source of many fantastic innovations, the most important of which is the fast-fusion motor. When they have outlived their usefulness, however (they nearly escape, killing several of their handlers in the process), she kills them, experiencing only a slight nostalgic twinge in the process.

Each group has evolved its own culture and utopian vision. The Daves, for example, mythologize Sri as their mother, and they dream of a day when, having fulfilled their holy mission against the Outers, they will be allowed to live on Earth, which they have never seen but believe to be a eutopian paradise. We do not know the superbrights' specific utopian vision, but we do know that they are so committed to escaping slavery that they will spend months planning an escape attempt and are willing to sacrifice their lives for freedom, even to the point of biting each other's throats out to create a distraction for their brothers to exploit (*QW* 157). It is sad that their entire lives, from birth to death, are lived in slavery to their creators, used to advance other peoples' utopian agendas and never their own, allowed their own dreams only when it keeps them pacified or serves as convenient propaganda to keep them in line. At the same time, their dreams for the future signal McAuley's belief that the utopian impulse is a profound element of human nature, ineradicable even by extensive genetic engineering.

The superbrights' fast-fusion motor, for Sri, is one of her tickets to power. It brings her the resources she needs in order to pursue her goal of surpassing Avernus and creating her own posthuman utopia. She does not care whom she exploits, hurts, or kills in the process, except insofar as it may impede progress toward her goals. In the broader scheme of things, the fast-fusion motor is the key technological development that makes the Quiet War possible. It makes the Outer System more accessible from Earth by shrinking travel times; it confers a major tactical advantage over the slower Outer ships; and it is the incentive that brings the cash-rich European Union into the war effort. In return for the fast-fusion motor's specifications,

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as well as entry into the J-2 singleship program, the European Union devotes its financial, military, and logistical support to the Quiet War. What becomes important later on is that they do *not* offer the motor to the Pacific Community in exchange for its support. Greater Brazil and the PacCom have clashed numerous times in the past, including a mere ten years before over the ownership of the Hawaiian islands. So although the PacCom does eventually join in the Quiet War and take a backseat role in the Three Powers Authority afterward, it remains subservient to the other two megastates due to its tactical disadvantage. This dynamic will be discussed further in Chapters 7 and 8.

The foregoing analysis is merely a core sample of the dynamics between the three megastates, as illustrated by the nested networks in Figure 6.1:

Alliance between Greater Brazil and the EU

Secret military research, funded by the militant faction

Sri as the head researcher, seeking power and influence of her own

The superbright program

The invention of the fast-fusion motor
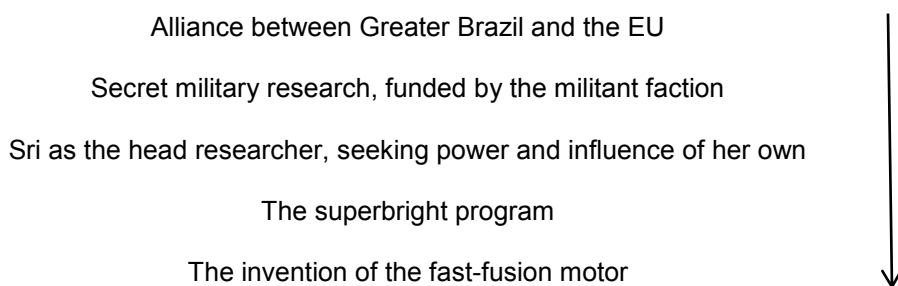
Figure 6.1 Nested Networks Leading to the Quiet War Alliance

The three higher, larger networks (especially Greater Brazil and the EU) are involved with many enterprises besides the superbright program and the fast-fusion motor. The political games various actors and networks play in the struggle for dominance are extremely complex, "fractally so," as Macy says of soil (*QW* 68). Next, we will turn our attention to some of the dynamics within pre-war Greater Brazil.

6.1.1.1 Greater Brazil's Ecosystem of Utopias

Greater Brazil has become quite a large network at this point, comprising most of North and South America as well as numerous off-Earth enterprises. As a result, there are almost

innumerable smaller networks within, as well as networks that stretch between Greater Brazil and other outside networks. Our focus in this section will remain the subnets already introduced, as well as a few other networks that have a direct bearing on the dynamics of Greater Brazil as a nation.

As described in Chapter 5, there are the great families and the greens, which are tangled confusingly with the militant faction versus the peace faction: there are family members and greens among the hawks, and there are family members and greens among the doves. Then there are internal conflicts within certain networks. Among the greens, for example, there is a tidal shift in which the radicals are gaining ascendancy, most likely due to their alliance with the militants. Among the great families, individual families are vying for power. The Peixotos are currently in control since the president is from their family, but the Fontaines, based in the former United States, are building networks and positioning themselves to take advantage of any opportunities to seize control. All of the families are waiting avidly for the aging president – nearly 200 years old – to die, at which point they anticipate a vicious battle for succession (see Chapter 7 for more details). Each of these groups hopes to wrest control of Greater Brazil so that they can use its massive network of resources and influence in the service of their own particular utopian visions, whether restoration of the Earth, imperial conquest, or feudal luxury. There are also individuals who are what Raphael calls "powers in their own right," who position themselves at network nodes, nexuses, and hinge points in order to leverage the power of larger networks to their own ends (*GOTS* 378). These are driving actors in networks of their own making, such as Sri Hong-Owen, her son Alder, biome engineer Macy Minnot, and diplomat Loc Ifrahim.

At this period, the militant network is in ascendancy; however, the greens still exercise some restraint upon them. As far as the average Brazilian citizen is concerned, their present and future survival still depend upon continued restoration of Gaia, which means that anyone attacking the greens risks the displeasure of the people. As individuals they are powerless, but

as a mob they have great potential to disrupt the network of resources and influence upon which the militants rely. As Oscar Finnegan Ramos tells Sri Hong-Owen, throughout history, "Rulers believed that they were in control, that they had been elevated above the herd and governed by common consent or brute force of divine right, but in reality they were merely servants of the mob" (*QW* 242). We will discuss mobs further when we get to Paris, Dione (this chapter) and the Brazilian revolution (Chapter 8), but at this juncture, it is worth noting that the militant faction recognizes the inadvisability of doing anything to rouse the mob against them. Instead, they carefully manipulate the mob's emotions via propaganda in order to enroll them in the militant network. Specifically, they sell them on the idea of the Outers' religiously offensive posthumanity and potential aggression toward Gaia. This propaganda is wildly successful, for there are war riots nearly every day in Brasilia. When Sri Hong-Owen drives through the main plaza, her limo is surrounded by "a parade of leering, confused, angry, tearful faces." Whether they have been directly exposed to the propaganda, whether they even understand what they are supposed to be angry about, does not matter: once it has begun, the emotions spread and multiply, and a type of groupthink, or, more accurately, groupfeel – an "inchoate rage" – takes over. Seeing Sri's limo, they converge "like ants swarming a sugar lure" and turn their rage blindly on this Other whose only known offense is not being part of the mob: "Fists battered the limo's body, drummed on its roof like rain." Lacking a productive outlet for their fury, they even lash out at each other: as Sri watches, "small knots of fighting were beginning to break out as the mob turned its rage on itself" (*QW* 242-4).

It is dangerous to arouse a mob without giving it a clear outlet, but in this case it works to the militants' advantage. Sri recognizes that the mob's emotions have made the war inevitable: "It can't be stopped. . . . The people have spoken. They want it" (*QW* 243). This is the crest of the tidal shift that the militants have been building for so long. They can now sit back and let the mob lynch innocent bystanders, destroy public property, and get into fights, while the greens are powerless to either calm the situation or turn it to their own ends. In fact, in terms of

McAuley's chess metaphor, the peace faction is in check, for part of the propaganda used to stir up the mob comes from the radical greens; therefore, any green voice of reason is sure to be ignored or even deemed heretical, with potentially violent results.

Despite their successful manipulation of the mob, it is clear, as stated above, that the militants must move carefully because they are constrained by many factors: the opposition of mainstream greens and the peace faction; the promise of mob opposition if they push too hard against the greens; inadequate resources, which necessitate the EU alliance; and intrigue within the militant faction itself, driven by uneasy alliances and fierce competition for control. It is because of these constraints that the militants create a tidal shift rather than a coup or some other open bid for power.

6.1.1.2 The European Union and the Pacific Community

Before analyzing the Quiet War, it is important to say something about Greater Brazil's allies. As stated in Chapter 5, we know little about the PacCom and even less about the EU, but what we do know is instructive. The EU, for example, is very similar to Brazil, which facilitates their alliance at this period. In Chapter 7, however, we will look at a philosophical difference between Greater Brazil and the EU that becomes a serious constraint on Brazil's appeasement of its radical greens, whose support is so critical to both the war and the aftermath.

The differences with the PacCom are much more fundamental. Ironically, since Brazil and PacCom have clashed militarily, the Brazilian militants do not attempt to recruit militants in the PacCom as they did in the EU. As a result, there is no concomitant tidal shift in the East: the PacCom's driving actors remain interested in peace and cooperation with the Outers. As Tommy Tabagee, their ambassador to the Outers, tells Macy Minnot, "unlike the [militant] Brazilians and Europeans, we prefer trade and cooperation to full-scale looting. It's more expensive, to be sure, but the benefits amply repay the investment" (*GOTS* 238). Although their goals are similar to the peace factions in Brazil and the EU, their tactics are more successful in the long run. Rather than ignoring the militants or attempting to turn them back, the PacCom

Table 6.1 Earth's major networks in the Quiet War period

	PACIFIC COMMUNITY	EUROPEAN UNION	GREATER BRAZIL		
			MILITANT FACTION	RADICAL GREENS	PEACE FACTIONS
OBJECTIVES	Forge peace with the Outer System; create political, cultural, technological, and scientific ties for mutual benefit.	The EU is split, much like GB, into pro-war and anti-war factions.	Gain wealth and power in the Outer System – better chance to do so than on Earth, where the older generations hold most of the power and resources.	Bring the Outers under the strict control of GB and its allies; sterilize the posthuman Outers; outlaw all forms of genetic engineering; gain tighter control of the population and governance of GB in order to bring its practices more in line with a deep ecological ideology.	1) Forge peace with the Outer System; create political, cultural, technological, and scientific ties for mutual benefit; OR 2) leave them alone entirely; concentrate resources on survival and ecological remediation.
ACTORS	Ambassador to the Outers: Tommy Tabagee.	Val-Jean Couperin, head of the Couperin family, was the most prominent supporter of peace with the Outers and the biome project.	Young family members (such as Arvam and Euclides Peixoto) and ambitious non-family (such as Loc Ifrahim and Sri Hong-Owen).	Certain of the green saints (unnamed) and other ecological ideologues (also unnamed).	Numerous individuals (such as Oscar Finnegan Ramos) and groups (such as Maximilian Peixoto's coalition) support peace with the Outers.

Table 6.1 – *Continued*

ENVIRONMENT	There are still bad feelings between GB and PC over past wars; this leads GB to offer their technologies to the EU but not the PC; as a result, PC ships are significantly slower than the EU's and GB's, which creates a serious tactical disadvantage.	Similar environment to GB; GB attains tech advances before the EU (largely due to unethical projects), so the EU is motivated to trade their money and support in order to get access to these break-throughs.	Increasing dissatisfac-tion among young family and non-family seeking power; in-sufficient war resources without support of another nation, such as the EU; the peace faction is an obstacle.	With the militant faction spreading propaganda against the posthuman Outers, they're able to tap into prejudice to gain support for what would otherwise be unacceptably draconian measures.	Healing Gaia is their goal; what the Outers do on distant moons doesn't concern them; they are opposed to war with the Outers because it is immoral and will divert resources necessary for remediation.
EXECUTION	PC makes a genuine effort to avert the war, but when it becomes clear that they're powerless to stop it, they realize that failing to join the war effort will only mean that they will have no power in the Outer System; joining the TPA will give them a chance to build a presence in the Outers System and secretly negotiate with the Outers.	Similar modus operandi to GB; Val-Jean Couperin is one of the early victims in a string of strategic assassina-tions that erode the political power of the peace faction.	Assassinate doves; employ propaganda appealing to religious interests, which cuts support from peace-supporting greens; aid EU militants; give EU tech in exchange for support; wage a "quiet war" using diplomatic relations as a cover; sabotage the biome project on Callisto.	Support the militant faction in return for promises related to governance on Earth and treatment of the Outers after the war.	Participate in peace negotiations with Outers; collaborate with the Outers to build an impressive biome near Rainbow Bridge, Callisto, Jupiter System, as a symbol of goodwill between the two branches of humanity.

Table 6.1 – *Continued*

OUTCOMES	This strategy works quite well (see next two chapters for more details).	The Quiet War is a success; the aftermath is less so (see next chapter).	The Quiet War is a success; the aftermath is less so (see next chapter).	They succeed in seizing power on Earth, but the sterilization initiative meets resistance.	The assassination of key peace leaders weakens the peace faction; peace talks are sabotaged by radical greens, who demand unconscion-able conces-sions from the Outers; the biome project is sabotaged by militants, and the crew is deported to Earth.

recognizes the short-term inevitability of war. Knowing that noninvolvement will merely leave them without a foothold of any kind in the Outer System, they resolve instead to join the war in a minor role. The "minor" part is significant for several reasons. One, it is inevitable: Brazil and the EU are happy to have the additional resources but want to keep the PacCom in a subordinate position. They are also at a major tactical disadvantage without the fast-fusion motor. More importantly, however, because they refrain from the major offensives and primarily serve as logistical support, they create a minimum of Outer resentment against them. By governing afterward with a light hand and fostering cooperative relationships with the Outers, they are able to build goodwill and work toward a more eutopian outcome. We will explore these dynamics further in Chapters 7 and 8, but it is important to recognize their goals at this juncture as they differ from the other Earth powers.

6.1.2 The Outer System

As with the Earth powers, we have a great deal of information about network structures and dynamics in the Outer System during this period. Rather than attempt a thorough analysis, we will hit some of the major divisions and zero in on a few of the individual utopian enterprises. We will examine how the various utopias differ, despite their Outer commonalities, how they are vulnerable to attack, and how they respond to the Quiet War.

6.1.2.1 The Old versus the Young

Perhaps the most significant dynamic going on at this time is the tidal shift amongst the younger Outers, introduced in Chapter 4. Although the Outers are now into their fourth generation, the original pioneers are still around and quite powerful. A combination of low gravity and longevity treatments means that the Outers can live well over two hundred years, far longer than the existing social paradigms are accustomed to. As young people of many communities tend to do, the fourth-generation Outers are chafing under the control of their elders. The pioneers did take this problem into account when they designed basic Outer culture: as described in Chapters 3, 4, and 5, they created network institutions such as *amae* and wanderjahr to help channel youthful energy productively. These do not, however, provide a sufficient long-term solution. The pioneers, like so many before them, have had their fill of risk-taking and are ready to build safely from the foundation they worked so hard to lay. They do not intend to oppress the younger generations, but they do demand the right to determine how to invest the fruits of their own labors. The fact that there are not one or two but three generations in this position at once means that the youngest have very little relative power indeed. On Earth, perhaps they could strike out on their own with very few resources and make a way by their wits and the sweat of their brows, but in the Outer System, striking out on one's own requires resources – generally of the expensive and time-consuming-to-construct variety with which their elders are loathe to part. The fourth generation wants "to use the ships for exploration and to

Table 6.2 Old versus young Outers

	PIONEERING GENERATION	YOUNGER GENERATIONS
OBJECTIVES	Maintain power and direct conservative, long-term projects with family assets; engage in scientific and artistic pursuits, now that they have the leisure to do so.	Have fun, discover their identities, gain independence from family control, dream and implement their own utopias, become pioneers themselves, explore the possibilities of transhumanism.
ACTORS	Outers around 150 years old who were born on Earth, the Moon, or Mars before the diaspora to the Outer System. Prominent: Abbie Jones, Gunter Lasky, Tymon Simonov, Avernus.	Younger generations born in the Outer System. Prominent: Newt Jones, Sada Selene, the Ghosts.
ENVIRONMENT	Having done their share of pioneering, this generation is ready to enjoy the fruits of their labors. They've worked for over a hundred years to make the Outer System into a home, and they relish the opportunity to pursue knowledge for knowledge's sake. They also have invested incredible time and resources to build up family and city assets, so they naturally feel they should have the majority of control over those assets.	These generations grew up in the shadow of their parents' achievements. On one hand, they can do much that was impossible for their ancestors: since survival is no longer a moment-to-moment struggle, they have leisure to engage in hobbies and travel amongst the moons of Jupiter and Saturn. However, they do not have control over assets that would allow them to become pioneers in the same way their parents did.
EXECUTION	Many decisions are made by direct democracy, so the family elders do not officially constitute a ruling party. However, they have had a long time to accumulate kudos and capital assets, so they have disproportionate power. They generally get their way when it comes to decisions that require funding or the use of large assets. The young are not always happy with how these decisions are made, but there are numerous social checks and balances (related to *amae*) that work as a safety valve to channel away youthful energy and frustrations, especially wanderjahr and free zones.	They engage in the marginally-satisfying outlets available to them: working in the family business, choosing to live in whatever Outertopia best fits their developing identities, blowing off steam in the free zones, making plans alone and with various groups for utopian enterprises they might engage in one day, etc. They also begin making visceral connections with the land by hiking from oasis to oasis, learning the moonscapes intimately and forming tribes reminiscent of the Native Americans, complete with totems and oral histories. This is a growing cultural practice that their elders are barely aware of and certainly don't understand.

Table 6.2 – *Continued*

OUTCOMES	They are able to implement their own utopian visions for about a hundred years, but the younger generations coming up are beginning to chafe under their control.	As they become more comfortable with their ability to survive outside of major cities and habitats, and as they continue spinning dreams of exploration with no practical way to implement them, they become more and more restless. Greater Brazil's sociologists predict "breakout" within ten years, if nothing else changes. They do, however, begin finding innovative ways to fulfill their dreams with limited resources.

transport volunteers eager to found new settlements in the far reaches of the Solar System, but they are outnumbered and outvoted by their parents, grandparents and great-grandparents" who "had controlling interests in the ships as well as in most of the infrastructure of the Outer System settlements" (*QW* 106). As Alexis de Tocqueville points out, democracies are vulnerable to a tyranny of the majority (209-12). This majority in the Outer System has created a gerontocracy, "cautious and reactionary, preferring discussion to decision, argument to action," a soft tyranny with which the younger generation is increasingly dissatisfied (*QW* 106).

The effects are not all negative, however. In a sense, this situation creates a positive conflict that forces the young Outers to become very creative in their quest for independence. For example:

> The would-be explorers and colonists were attacking this problem with vigor.
> They had worked up plans to set up robot factories that could settle on suitable
> asteroids and mine and refine metals that would be flung toward Jupiter and
> Saturn using rail guns built on site, and had designed ships equipped with
> lightsails and propelled by fixed lasers, or with sophisticated chemical reaction
> motors built from ceramics and fullerene composites. These slowboats might

take a decade or more to reach their destinations, but their passengers would

sleep out the voyage in hibernation. (*QW* 107)

Since existing, expensive resources are not available to them, they create their own, cheaper

ones, "determined to overcome their lack of financial and political leverage with their energy,

ingenuity, and determination" (*QW* 107). There are two major benefits to this utopian enterprise.

The most obvious is the development of new technologies to make travel and colonization in the

Outer System more accessible to those with limited resources. In fact, these innovations have

the potential to benefit Outer society at large. The current ship-building process is extremely

slow and expensive. The older generations are reluctant to devote resources to new ships when

they feel the ones they already have are sufficient for their needs; however, their ships are

aging, and they have no backup plan in case they need more ships quickly – such as during

and after the Quiet War. These new types of ships provide an immediate solution as well as the

promise of improvements to the construction of mainstream ships. The other major benefit is the

development of creative initiative and "can do" spirit amongst the young Outers. The pioneering

generations had such initiative: they would never have succeeded in building a civilization off-

Earth if they had not been creative and enthusiastic problem-solvers. There is always a danger,

however, that in the quest to make life easier and more comfortable for their descendants, the

pioneers might unintentionally rob them of competence. Fortunately, human instincts step in to

prevent laziness from ruining an entire generation.

6.1.2.2 Mutual Construction

Before delving into some of the individual Outer networks, it is interesting to note how

physical environments help to shape the societies that inhabit them. For example, the Outers

originally believe that Titan will become a bustling center of commerce and society in the Saturn

System because it possesses an atmosphere rich in natural resources. When they actually

begin mining operations, however, it proves quite difficult to accomplish; it is much easier to

mine CHON from Iapetus and the other inner moons. Titan therefore becomes a refuge for the

only people willing to live in such a hellish environment: anarchists and loners, including (at times) Avernus. Since it is a less desirable prize to conquerors, it is more or less overlooked during and after the Quiet War. This allows its residents more autonomy and privacy. It also means they are quite inbred: most of the residents of Tank Town are near relatives of the mayor, Gunter Lasky, and few people immigrate to Titan. Iapetus, on the other hand, although it is almost as sparsely populated, is taken by the TPA because it has rich, easily mined natural resources. Later, as we shall see in Chapter 7, Uranus's moon Miranda makes an attractive new home for the Free Outers because its proliferation of canyons and crevasses provides abundant hiding places from the TPA. Each individual utopia is shaped in some way by the environments they choose to occupy.

6.1.2.3 Rainbow Bridge, Callisto, Jupiter System

Rainbow Bridge, founded circa 2119 A.D. (about ninety-eight years before the Quiet War), is the oldest settlement in the Outer System (*QW* 99). The residents take pride in this distinction, as well as in their version of direct democracy. Their society is totally open: there is no reasonable expectation of privacy anywhere except in the habitat's free zone, a type of red light district. It seems as though the entire population owns little flying drones that they can send anywhere to be their eyes and ears, spying artlessly on everyone and everything. They participate in each other's lives and in the public decision-making process as a matter of course. Any citizen can post a poll on the Net for any reason, and these polls often sway public decisions, acting, in effect, as informal yet sometimes binding votes. Other decisions are placed before the public more deliberately for traditional voting. The "enthusiastic, animated, sincere, and fantastically optimistic" residents "blithely assumed that they were the pinnacle of human evolution, and their city a utopia" (*QW* 96).

Their status as the Outers' oldest settlement is why the peace faction chooses to locate the biome project in Rainbow Bridge. The name is also symbolic of the environmental and military cataclysms that they hope will never be repeated: they are building bridges of peace

Table 6.3 Rainbow Bridge, Callisto

	RAINBOW BRIDGE, CALLISTO	
	MAIN POP	BIOME CREW
OBJECTIVES	RB residents seem to lack any utopian impulse because they don't see any need for it – they believe they have already achieved utopia. They merely work to maintain it and enjoy themselves in various pursuits, such as interfering with the biome project.	Foster peaceful relations between Earth and the Outers.
ACTORS	RB residents seem youthful, curious, and innocent; however, they can be more streetwise and canny than they appear. Prominent: Loris, one of Macy Minnot's Outer assistants.	Ecologists and consanguineous members of the great families from Greater Brazil, primarily the Peixotos and the Fontaines. Prominent: Euclides Peixoto, Macy Minnot, Emmanuel Vargo, Ursula Freye.
ENVIRONMENT	This is the oldest city in the Outer System, founded nearly a century ago. It has maintained a steady population around 20,000 for most of that time, and they take pride in their wise management of resources. They are content to maintain what they have and not plan for population booms or other major upheavals, because they have faith in their ability to maintain the status quo.	There is a century-long history of acrimony between Earth and the Outers. Both sides are very skeptical of each other. The Earthers have heard propaganda claiming that the Outers are working on some kind of weapon of mass destruction, like the residents of Mars had supposedly done. Also, the Outers' posthuman "tweaks" seem sacrilegious to those brought up worshiping God and Gaia and believing that the Earth should be restored to its original, pristine state. The Outers are suspicious of the Earthers' motives in coming and rightfully suspect that this project might be a cover for war preparations. This leads to an uneasy détente and a sense that hostilities could break out at any moment.
EXECUTION	They exercise a rigorous form of direct democracy – practically every decision that affects the city is put to a vote, either officially or in public opinion polls, which any citizen can initiate. The only place one can have privacy is in the free zone,	Detailed plans for the biome are drawn up on Earth in consultation with the residents of Rainbow Bridge. Once the biome crew arrives, they revise the plans according to certain changes the citizens have requested, and they collaborate with Outer scientists to build the biome from the bacterial level

Table 6.3 – *Continued*

	which follows Las Vegas rules (what happens in the free zone, stays in the free zone). Everywhere else, there is no reasonable expectation of privacy: people can go anywhere they want in person and can send video drones in their place to observe and comment upon anything they wish. Therefore, events and decision-making are highly transparent and vigorously participated in by nearly the entire populace. It is common for projects like the biome to be changed on the fly in response to late-breaking suggestions and polls from the citizenry. There is, however, some sort of underground intelligence-gathering and clandestine activity, at least with regard to the biome crew from Earth.	up and troubleshoot as they go. Curious Outers are constantly underfoot, asking questions and commenting on the proceedings on public internet forums.
OUTCOMES	From what we can see in *The Quiet War*, this appears to be a relatively happy, stable community. However, it is clear that they are not capable of fending off takeover by Greater Brazil: none of the Jupiter System puts up a fight, and though they are ruled more gently than those who rebelled in the Saturn System, they are subjected to the zero-growth initiative and other TPA regulations that are not consistent with their utopian practices. So even though their system seemed relatively stable in isolation, it cannot survive the intrusion of aggressors. There are also hints of the tidal shift amongst young Outers, though not as strongly here as in, for example, East of Eden.	Some peaceful relationships are indeed forged during this project: Macy Minnot, for instance, gets along quite well with her odd but intelligent and gentle Outer assistants. She feels they are more trustworthy than her intrigue-enveloped compatriots. However, the project fails spectacularly. It gets a rocky start when the chief biome engineer, Emmanuel Vargo, dies upon being revived from hibernation. His lover, Ursula Freye, collaborates with certain Outers (including Loris) to investigate his death, which she (correctly) believes was a sophisticated assassination meant to harm the project. Macy gets dragged into things and ends up framed for Ursula's death. Once several deaths pile up, the residents of RB vote to deport the biome crew. Macy is forced to seek political asylum with the Outers, who send her to East of Eden, Ganymede, to keep her out of trouble. The peace factions on Earth are dealt a heavy blow.

between former enemies. When the biome crew arrives, however, there is culture shock on both sides. Those hailing from Greater Brazil and the European Union are accustomed to an orderly hierarchy and centralized decision-making. The democratic process in Rainbow Bridge seems to them to be messy, chaotic, and ridiculously inefficient. Likewise, the Outers find the crew very uptight and standoffish, and they enjoy tweaking them a bit. When Macy Minnot's assistant Argyll Hall notices her shock at his appearance, he makes "a point of letting Macy know all about his little differences from the human norm" (*QW* 48). They are also enthusiastic evangelists for their way of life, and when Sri Hong-Owen shows "cool indifference to their clumsy propaganda," they are "increasingly puzzled and embarrassed" (*QW* 96).

Friction often arises when the Outers and the Earthers interact. Macy and her team get increasingly irritated at the seemingly endless changes the Outers vote on for the biome, and they feel uncomfortable with Outers constantly underfoot, poking around the laboratory, asking questions, confronting team members about engineering decisions they disagree with, posting scathing criticisms on the Net, and so on. Macy interprets this behavior as immaturity on the Outers' part. Feeling uncomfortable with the seeming free-for-all, she longs for the familiar comfort of a centralized society.

Despite their apparent naïveté, there is evidence that Rainbow Bridge has some sort of counter-espionage network in place. When Macy gets pulled unwillingly into an intrigue between Ursula Freye, a consanguineous Fontaine on the biome crew, and Loc Ifrahim, the unscrupulous Peixoto diplomat, she worries about getting her Outer assistants into trouble for helping her. She need not have worried, however: Loris is neck-deep in the situation before Macy is even aware of it. McAuley does not reveal the details, but it seems that Loris and a number of others are well-informed about the militant tidal shift on Earth and know a great deal about the preparations for the Quiet War. Recognizing that the murders of Emmanuel Vargo and Ursula Freye are an integral part of the militants' quiet assassinations and takeover of key

positions, they are working behind the scenes with members of the peace faction to counter the militants' moves. Their efforts, unfortunately, turn out to be too little too late, but at least they are in a position to help Macy Minnot escape Loc Ifrahim's clutches and defect from Brazil. They deport the biome crew and, ready to wash their hands of the situation, send Macy to another moon for asylum. This is a huge political setback for the peace factions on Earth, who now begin losing ground to the militants more quickly.

6.1.2.4 Minos, Europa, Jupiter System

To escape heavy surface radiation, Minos is hidden deep underground, so far that it takes over a day for Sri Hong-Owen and her son Alder to descend from the surface to the city via elevators. Despite the relative warmth of its underground ocean, the city is quite cold. Although the older citizens adapt by dressing warmly, the younger citizens are more likely to choose a posthuman solution, tweaking themselves to grow "thick, lustrous coats of fine hair and insulating layers of fat – seal-people with human faces and human hands" (*QW* 120). Like all Outer communities, they practice a form of democracy. All substantial decisions, such as whether to expand an experimental farm, are discussed and decided in the Citizens' Assembly by majority vote. They are quite proud of ruling by consensus, but as we see in other communities, the old outvote the young. As Sri points out, it would be a very short step to tweak the seal-people to breathe Europa's ocean. At present, they are merely aesthetically different from their fellow citizens, but if they are altered to breathe water, they have the potential to become, for all intents and purposes, a different species. This illustrates the overall phase change inherent in the posthuman tidal shift: "What will happen to your consensus when the human race splits into a hundred species?" (*QW* 125). The conservative majority will surely vote against any such paradigm-threatening changes, but given the tidal shift amongst the youth, it is possible that a faction of the young people will break off on their own to form underwater colonies with the newly developed self-perpetuating farms (*QW* 124).

6.1.2.5 East of Eden, Ganymede, Jupiter System

Like those of Rainbow Bridge, the majority of East of Eden's residents believe they have achieved utopia and they want to keep it that way, albeit with less changeability than Rainbow Bridge seems to tolerate. Where Rainbow Bridge has an aura of open cheerfulness, East of Eden is rigid and sober. As Newt Jones says, they are "famously puritanical," outlawing "every kind of psychotropic stronger than caffeine or theobromine" (*QW* 169). Their founding members moved to Ganymede because they believed "that the other inhabitants of Jupiter's moons had grown too soft, too bourgeois." The residents are generally "austere and close-minded, keen on conformity, custom, and civic duty" (*QW* 141). The tyranny of the majority is much more evident here than in any of McAuley's Outertopias: since "Luxury was a crime" and "self-sacrifice a virtue," they expect (read: require) individuals, when the majority deems it necessary, "to make a sacrifice for the greater good" so that the community can "avoid inharmonious conflict" (*QW* 174).

This community is feeling the effects of the tidal shift more keenly than Rainbow Bridge because it is much more oppressive to its young people: at least Rainbow Bridge allows their young people to express their social exuberance and curiosity, and well, there is always the free zone if they want to blow off a little steam. East of Eden has none of that. As a result, many of the teenagers are desperate to escape, yearning for their fifteenth birthdays when they will achieve majority and be able to leave on a (probably permanent) wanderjahr. Sada Selene, ever the dramatic one, says, "If I can't go up and out right now, I'll die of boredom" (*QW* 184).

McAuley highlights two sets of posthuman rebels in East of Eden: the refuseniks and the Elohim transhumanism crew. The refuseniks think of themselves as "rebels without a pause," though Macy Minnot thinks they are "just a bunch of alienated kids going through a difficult phase." Even though they express disdain for East of Eden's "claustrophobic codes and customs," they make no effort to change them. Their solution is to withdraw from mainstream society: "they camped out in empty apartments, lived on dole yeast and whatever they could

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Table 6.4 East of Eden, Ganymede

	EAST OF EDEN, GANYMEDE		
	MAIN POPULATION	COSMO ANGELS	REFUSENIKS
OBJECTIVES	Very similar to Rainbow Bridge, in that they believe they have achieved utopia and merely work to maintain it.	To achieve higher consciousness by eschewing their base animal natures, including sex.	Challenge the status quo of East of Eden, which they find to be oppressive; make preparations to leave East of Eden when they are old enough, in order to seek their own brand of transhuman utopia.
ACTORS	Citizens concerned with the sober pursuit of science, literature, and artistic endeavor. They are more interested in theory and enjoyment than in practical applications. Prominent: Ivo Teagarden.	Narcissistic young citizens. Prominent: Jibril.	Intelligent, energetic, ambitious young citizens of East of Eden. Prominent: Sada Selene.
ENVIRONMENT	The physical shape of this habitat is symbolic of their worldview: long and narrow. Maintenance of the status quo is all-important.	Outers have worked for a century to engineer their genomes, both before and after birth, to make their bodies better-adapted to life in the Outer System. They have achieved enough stability that many youngsters now experiment with genetic tweaks and other body-altering treatments in the same way that youngsters in our time get tattoos and piercings. This practice has become so common that aesthetic standards have greatly diverged from those of Earth.	They perceive East of Eden to be too staid, puritanical, and controlling. Sada complains that nothing ever happens there – the youngsters are all bored out of their minds.

Table 6.4 – *Continued*

EXECUTION	Those who threaten the status quo are often ostracized and assigned to forced labor in the vacuum organism fields. Rehabilitation of prisoners focuses on psychotherapy, with the goal of bringing them in line with mainstream attitudes and behaviors. It seems that it is not easy to leave East of Eden, either: Macy and the refuseniks have to work quite hard to escape.	Cosmo angels undergo surgery and genetic treatments to transform themselves into something resembling angels: tall, willowy, androgynous, and beautiful. They erase their former identities from public record and adopt the names of angels from the Bible. Most cosmo angels are involved in the performing arts.	Since they are not able to pursue their true interests, due to their young age or the community's laws or their lack of resources, they rebel by refusing to participate in normal daily life of the community: they avoid the weekly work requirement, live off of dole yeast and whatever else they can mooch, and hold secret court in the city's mildewed, abandoned sewers.
OUTCOMES	This environment is pleasing to those who agree with or are content with the status quo; to others, however, it is incredibly oppressive. The younger citizens in particular are chafing at the lack of outlet for diverse interests and lifestyles.	Nobody takes the cosmo angels seriously except for themselves. At their worst, they are merely annoying, narcissistic gadflies. As Sada Selene says, the system tolerates them because they have made difference and rebellion into something "safe and codified." They also help to reinforce the status quo by harassing Macy, the outsider.	For the most part, their rebellion is nothing but bluster and irresponsibility. Although they despise the cosmo angels for being "posers" (in today's parlance), in reality they don't do much more than the cosmo angels to effect change in their society. It does, however, lead Sada Selene to join the Ghosts, a radical transhuman cult, in her desperation to escape her oppressive home.

cadge from passersby, breathed the settlement's air, drank its water, and used its net" (*QW* 143-4).

These refuseniks have nothing but contempt for the Elohim transhumanism crew, better known as "cosmo angels" in reference to the surgery they undergo. In addition to cosmetic surgery that reproduces the stereotypical "angel" look, they also obtain sex changes to become androgyne neuters. They eschew sex and all of the carnal nature in favor, supposedly, of a higher state of consciousness. In practice, however, they generally hang around in busy public areas making fun of people, particularly those less beautiful than themselves. As discussed in Chapter 2, they attack Macy Minnot with special fervor because she, unlike the Outers, is completely unaltered – mere "base stock" (*QW* 145). This opinion is relatively widespread amongst the Outers, which illustrates one of the consequences of the century-long rift between the two segments of humanity: prejudice on both sides as a result of their obvious morphological differences. The Earthers tend to see Outers as freaks or aliens, and the Outers tend to see the Earthers as barely a step above the apes.

Ivo Teagarden, one of the older leaders, dismisses the cosmo angels as little more than narcissistic gadflies, harmless in the main (*QW* 143). The refuseniks agree and hasten to deny them the title of rebel, claiming that "the cosmo angels don't threaten the status quo" (*QW* 143). The refuseniks, on the other hand, believe that "the system" hates them because they want to "take control of the course of human evolution." Their transhumanist dreams threaten the mainstream's "fantasy of perfection" because "true transhumans are always in flux, evolving in a hundred different directions," while any so-called achieved utopia is static (*QW* 143). Much of this is mere high-flown rhetoric at this stage, however, and probably registers little if at all on the mainstream radar. They do work in some ways to unsettle the central network, though not nearly as much as they would like to think. The chief way they do this in *The Quiet War* is by helping Macy Minnot escape with Newt Jones. Even at that, they are actually ridding East of Eden of a headache the mainstream would rather not deal with. In the end, they represent a

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mostly powerless dissenting voice that is easily brushed aside as teenage angst and, in Macy's case, helps to reinforce the status quo. This is one of the reasons why Sada is so strongly drawn to the Ghosts: they are making concrete progress toward a transhuman future.

<center>6.2 The Quiet War</center>

6.2.1 Offense: Earth's Hawks

Once the biome crew and diplomats from Earth are ejected from Rainbow Bridge, preparations for the Quiet War begin in earnest. Loc Ifrahim, having accomplished his secret mission to assassinate Emmanuel Vargo and thereby sabotage the biome project, is rewarded with an important advisory position in the Quiet War think tank. The Theoretical Strategy Group (TSG) models "every conceivable way of invading and securing the cities and settlements of the Outer System." The TSG is a utopian nexus in which ideas from many perspectives swirl around and decisions are made about the shape the war will take, which also determines what life in the Outer System will be like after the war. Although "a vocal minority" advocates genocide as the best solution, "most of the wargamers were engaged in what they called asymmetric or 'quiet war' strategies that mixed propaganda, espionage, sabotage, and political coercion with conventional military tactics tailored to the unique conditions of the Outer System" (*QW* 186-7). Genocide is rejected not because it is immoral but because it is likely to result in the destruction of the "valuable assets that for many were the only justification for going to war." Since the Outers have been pursuing "every kind of theoretical and applied science for more than a century," the Earthers hope to make "incalculable" profits by "plundering their databases and genome libraries, and seizing their scientists and gene wizards," not to mention the valuable habitats themselves (*QW* 187).

6.2.2 Defense: The Outers

The Outers are generally divided along generational lines regarding how to handle the Earthers' presence. The older generations, as cautious and risk-averse as they are, are reluctant to take any aggressive action. They prefer to believe that there is no problem or that

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attempts at negotiation will succeed in averting war. Some, as mentioned in the previous section, know that war is coming and prefer surrender over death. With this justification, the entire Jupiter System capitulates without a fight. This attitude seems defensible in retrospect, given the terrible destruction in Paris and the slow death of those in disabled ships. The lives of those who surrender are bought at a steep price, however: heavy taxation, the loss of most freedoms, the destruction of small habitats, the herding of all Outers into large cities for easier control, and, most controversially, the forced sterilization of all Outers under Brazilian hegemony.

The younger generation is divided. Some are eager for war, believing that the length and fragility of Earth's supply lines will hamstring their ability to wage an effective campaign, particularly in the Saturn System. Others, however, recognize their vulnerability to attack and believe their most pragmatic option is to scatter and hide. There are more than enough tiny, hidden refuges to house all of the Outers in safety and stymie the Earthers' attempts at conquest. As Newt Jones tells Macy Minnot,

> "The enemy thinks in terms of cities, centralization, top-down leadership,
>
> hierarchies. We don't. Paris is the largest city of Dione, but it isn't the capital.
>
> And ninety-five percent of the habitable space on Dione is in places like this.
>
> When they first came here, our grandparents and great-grandparents felt the
>
> need to huddle together against a hostile environment. But this is our home
>
> now. We don't need cities anymore." (*QW* 363)

Since there is no central decision-making authority for the Outers, all three perspectives are in play. Most Outers choose to surrender, a few (mostly the people of Paris, Dione) choose to fight, and a remnant scatters to the far Outer System in search of a hiding place.

6.2.2.1 Paris, Dione, Saturn System

Paris, Dione, sets itself up as the public center of resistance against Earth's aggression. They recognize that conquest is destructive of their eutopian ends; unfortunately, they are

Table 6.5 Paris, Dione

	PARIS, DIONE		
	HAWKS	DOVES	
		AVERNUS	PERMANENT PEACE DEBATE
OBJECTIVES	Retain independence from Earth without going into hiding.	Defuse tensions between Earth and the Outers, build on common ground, usher in a new era of unity and joint utopian enterprise.	
ACTORS	Young Outers in general, citizens of Paris in particular. Prominent: Mayor Marisa Bassi.	Avernus, the Outer System's most famous gene wizard.	A fluid group of people who come and go at a 24/7 "debate."
ENVIRONMENT	It has been over 100 years since the Outers fought any kind of war. They have neither the know-how nor the military-industrial complex to match the armies of Earth. Their habitats are vulnerable to simple attacks. Like many of the "rebs" at the outset of the Civil War, they place great faith in patriotism to carry the day, via slogans like, "Get out of our sky!" They also place too much emphasis on the supposed fragility of Earth's long supply lines.	The Outers have always placed great faith in debate as a solution to problems. However chaotic and contentious the democratic process might have been, it has always led to non-violent resolution amongst the Outers: either the parties come to a compromise or the dissatisfied go off to form their own brand of utopia and do things their way. Only the very oldest Outers, like Avernus, remember what it was like to fight Earth, and that was an Earth still greatly weakened by the Overturn. Most have no experience with aggressors who have no interest in negotiations or peace.	
EXECUTION	Normally, a decision like this would be entrusted to the democratic process, but Bassi is impatient with it, especially when it goes against his wishes. He uses propaganda and superficial military preparations to whip the populace into a patriotic fervor. This allows him to implement increasingly tyrannical measures until finally the city council votes	Avernus draws upon her extensive political capital to support projects such as the biome. She gives speeches in favor of peace and moves to Paris as a sort of hostage. She hopes that the Outers respect her enough to follow her advice, and she	The "Permanent Peace Debate" has appropriated a small public theater and occupied it continuously for a number of weeks or months, 24 hours a day. Anyone who wishes may take the stage for any reason: audience approval is signaled

Table 6.5 - *Continued*

	to grant him absolute power for the interim, like Greek tyrants of old, and he transforms Paris into a police state. He works hand-in-hand with the Ghosts to accomplish all of this.	also hopes that the Earth powers will consider her too great a prize to risk destroying in battle. She employs a cadre of advisors, and then ignores their entreaties to leave Paris.	by silence, and disapproval is signaled by slow, measured clapping. People who refuse to leave the stage after clapping begins are forcibly removed.
OUTCOMES	The outcome is disastrous: Paris falls in less than a day, and it only lasts that long because the Earth powers want to keep the city intact and take prisoners. The people are subjected to sterilization and strict laws. Even before that, however, the transformation of Paris into a police state destroys all their utopian principles and proves to the Outers in general that their utopias are vulnerable from the outside AND the inside.	All her efforts come to naught, and she barely escapes capture. She is shaken because she truly had faith in the strength of these utopias she has been instrumental in building. After their narrow escape, she tells Macy that she needs to disappear for a while to re-evaluate her ideas about how the world works. This leads to a new set of utopian enterprises later that prove much more effective.	Although the Debate was serious in the beginning, it has devolved to little more than a loose succession of drumming, poetry recitals, group meditation, and political rants from marginal members of society. Nobody outside their group takes them seriously, and they have little to no measurable effect on the dynamics between Earth and the Outers.

mystifyingly overconfident in their ability to repel Earth's military by force. This overconfidence is fed by two major flaws in their thinking. First, the Outers have lived at peace for a hundred years. They have read about war, but most of them have no first-hand experience of it. Those who do – the pioneering generation – remember it from a great temporal distance. They fail to appreciate the fact that the Earth powers have honed their military expertise via a hundred and fifty years of constant fighting. As Loc Ifrahim tells Macy Minnot later,

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A nation preparing for war builds manufactories to stamp out weapons and tanks and planes. It builds fleets of ships and spaceships. It drafts and trains tens of thousands of people to serve in its armed forces, and many times that number are indirectly involved. Its scientists and technicians are drafted, too, and spend every waking hour devising ingenious methods of mass destruction. All its resources, every gram of its political will, is poured into the war effort. So if there is a war between Greater Brazil and the Pacific Community, the victor will be stronger at the end of it, not weaker. (*GOTS* 331)

In this situation, Greater Brazil has spent a century and a half building a massive military network, compared to perhaps a few months of inexpert preparations in Paris. This is not to say that superior strategy could not even the playing field, but Paris has no such thing: they wait in a centralized, vulnerable location for Earth's soldiers to come fight them head-to-head.

The other flaw is a classic case of groupthink. It begins with the young Outers chanting slogans like, "Get out of our sky!" and winning kudos for increasingly audacious actions against the Earthers. For example, a Ghost ship decorated with a bright yellow smiley face and various slogans performs a daring flyby of two Earth ships on a mission in Saturn's atmosphere. The older Outers disapprove, calling it "unevolved primate behavior": Junpei Asai says that "most would prefer to talk to them in a sensible fashion than antagonize them." An excited, energized Newt Jones disagrees: "It told the Brazilians that they can't move around with impunity. . . . That there are people prepared to stand up to them" (*GOTS* 206-7). They grow bolder over time, believing that they are successfully intimidating Earth. With ever increasing confidence, they persuade each other that they can win an "even" fight and dismiss opposing perspectives as overly conservative or cowardly. Earth's military refrains from retaliation, however, not out of fear or incompetence as Newt believes but because they are acting according to a carefully-crafted plan. They *want* the young Outers to get a false sense of victory from thumbing their

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noses at the enemy. They need some of the Outers to resist so they can use a decisive military victory to justify a forcible takeover of the Outer System.

This rash, militant attitude manifests most prominently in Marisa Bassi, mayor of Paris. Early on, he arguably has a point about the Outers needing to present a united front against the aggressors. He comes across very much like Benjamin Franklin, who at the signing of the Declaration of Independence said, "We must all hang together, or assuredly we shall all hang separately." In the early stages of his campaign, this is Bassi's message as he urges all the Outers in the Saturn System to hang together. Had he been successful, they might have coordinated a very effective scatter-and-hide guerilla campaign. With its long supply lines and without a clear, centralized target, Earth's military would have been vulnerable to a war of attrition. The Parisians "could easily disperse amongst the hundreds of empty refuges and oases scattered across Dione," but they have no intention of doing so, for "evacuating the city would be as bad as capitulating to the enemy; they could retain their sense of defiance only by staying where they were . . . and at the same time denying that defeat was an option." In attempting to assemble a coalition, Bassi spearheads a relentless propaganda campaign, and as time goes on, he grows more reckless with his boasts about the Outers' capabilities. He foolishly vows that Paris will stand if others do not. By doing so, he gives Earth the centralized, stationary, symbolic target it needs. As Dave #8's various acts of sabotage become apparent and the Parisians realize they are truly under attack, Bassi realizes that citizens will begin jumping ship unless he increases their incentives to stay; therefore, he gives nightly speeches in which he "whipped the crowd into a patriotic ferment" with "[a]n ardent defiance and aggression backed by patriotism and naïve enthusiasm" (*QW* 297).

Setting aside for the moment the military merit of Bassi's position, what matters more to our analysis is what he does to the utopia in his attempt to resist Earth. As Umm Said tells Sri Hong-Owen after the war, Outer society has "checks and balances" in place to discourage groupthink and prevent tyranny (*GOTS* 193). Bassi systematically dismantles these checks and

balances in order to put Paris on a war footing, eventually transforming the city into a de facto police state under martial law, one in which "Citizens had to be eternally vigilant, eternally suspicious of their neighbors, alert for any sign of panic, disaffection, or disloyalty." Anyone remotely suspicious could be arrested and detained indefinitely for questioning, for "In order to protect the city's freedom, habeas corpus had been suspended" (*QW* 297). All anti-democratic measures are considered justified by the current crisis.

6.2.2.2 Dione's Proponents of Peace

Several closely intersecting networks resist Bassi's war rhetoric: the Permanent Peace Debate (a utopian nexus), Avernus (with multiple utopian enterprises), and the Jones-Truex-Bakaleinikoff clan (a young utopia). The Permanent Peace Debate is a peace rally that misses its cue to end. Originally begun as a utopian enterprise by intelligent people making a competent case for peace, it has devolved into a farce: most of the original participants have gone home, and the remaining crowd, which comes and goes, is dominated by the homeless, the mentally ill, and the conspiracy theorists. Avernus is a more credible opponent to the hawks, though she is no more successful in preventing war than the Permanent Peace Debate is. She makes herself a sort of hostage in Paris, reasoning that since she would be a great prize to the Earth powers, her presence in the city will make them think twice about attacking, or at least refrain from simply bombing the entire city to smithereens. She also hopes to draw upon her matchless political capital and store of kudos to calm the Outers' war drums. She fails, of course, because she has seriously misunderstood how committed each side has already become. She and the other peace supporters do not realize how carefully Earth's militant network has been built and how long ago it was set into motion: they are in check before they even know they are in the game. She also underestimates the power of the mob mentality Bassi invokes.

The Jones-Truex-Bakaleinikoff clan, headed by Newt Jones' famous mother Abbie Jones and several other elders, is a larger and more complex network than Avernus and the

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Table 6.6 The Jones-Truex-Bakaleinikoff clan

	JONES-TRUEX-BAKALEINIKOFF CLAN		
	DOVES	HAWKS	MACY MINNOT
OBJECTIVES	Avoid provoking the Earth powers; maintain independence; preserve existing relationships with fellow Outers.	Maintain independence; prove that the Outers are equal to any challenge that Earth can send their way; send the aggressors back to Earth with their proverbial tails between their legs.	At this point, she does not have an affirmative utopian goal other than to gain or maintain independence from any individuals or groups that might seek to manipulate her.
ACTORS	Members of the clan, particularly the older generations. Prominent: Abbie Jones.	Members of the clan, particularly the younger generations.	Macy is an outsider wherever she goes; at this point in time, very few people share her perspective (Yuli, Avernus's daughter, is one).
ENVIRONMENT	As with other Outer doves, this group really has no idea what it means to face a determined aggressor with a far superior military. They believe that remaining neutral will allow them to keep their independence. Since the older generations have already been through their pioneering days and have invested a great deal of time and money in their current home, they are reluctant to risk anything.	As with other young Outers, this group has been chafing under the direction of older family members. They are full of energy and ambitious dreams but lack the wherewithal to pursue them, since the centenarians control most of the kudos and capital assets. Their frustration makes them eager to grab any opportunity to break the routine and distinguish themselves in some kind of achievement of their own.	Macy has spent most of her life running away from a series of oppressors. She is a classic anti-utopian: she believes that any pursuit of an ideal society is suspect and is merely a cover for propaganda, manipulation, and exploitation. She prides herself in being an objective, rational observer who eschews extremes in perspective: she recognizes the good and bad in every person and group, and she resists all others' attempts to enroll her on one side or another. She is determined to remain neutral.

Table 6.6 – *Continued*

EXECUTION	Both sides engage in a rigorous democratic process to decide. They argue and debate and seek out allies for their side, but in the end, once a vote is taken, all abide by the decision. The losing hawks, however, bitterly criticize Macy for her support of the doves.	The hawks and doves in the clan both try to get her on their side, particularly when it comes time to vote on whether to stand with Paris against the Earthers or to stay neutral. She criticizes both groups, saying the hawks are fooling themselves if they think they can defeat Earth, and the doves are fooling themselves if they think Earth can be negotiated with. She votes with the doves but thinks it's probably time to run and hide. Marisa Bassi tries numerous times to get her to make public statements about the brutality of the Brazilian regime, even resorting to taping her secretly. She infuriates him by instead holding a highly-publicized conversation with Avernus in which she gives her honest opinions.
OUTCOMES	Both sides are wrong, but for different reasons. Remaining neutral, negotiating peace with Earth, and successfully fighting Earth's militaries all prove impossible, given the vulnerability of the Outers' habitats and their slowness to recognize the danger of their situation. Given their circumstances at the time, the only viable alternatives are to surrender (and endure sterilization and tyranny) or to flee and hide.	Each time she tries to remain neutral and avoid being exploited, it happens anyway. Bassi has the Ghosts arrest and interrogate her for six weeks, and his claim that she is a Brazilian spy helps to bolster the war effort. She and the other political prisoners narrowly escape after the battle for Paris begins. She, Newt Jones, and several hundred other refugees are part of an Outer post-war diaspora to the Uranus System.

Permanent Peace Debate. Although their habitat is located near Paris, they are completely independent of the city. Deciding whether to stand with Paris in defiance against Earth engenders a bitter, drawn-out debate. The younger members of the clan, like most of the young Outers, belong to the "Get out of our sky!" crowd. The older members either do not believe the Earthers have evil intentions or genuinely think that negotiations can avert the war. A few, like Macy Minnot and Newt Jones, believe the war is inevitable but recognize the futility of a direct confrontation. The clan takes a formal vote in which the peace faction prevails; they agree to remain independent of Paris.

6.2.2.3 Marisa Bassi and the Ghosts

This does not spell the end of Paris' involvement with them, however. Marisa Bassi is particularly keen for Macy to give a statement regarding all of the evils she endured as a citizen in Greater Brazil because she is "the authentic voice of the oppressed" (*QW* 214). Adamantly against being used as part of anyone's "propaganda machine," she refuses; however, Bassi surreptitiously records a private argument between the two of them and streams it to the Net (*QW* 214). In retaliation for her refusal to help, he later sends the Ghosts to arrest and hold her prisoner for more than six weeks of interrogation.

The dynamic between Marisa Bassi and Macy Minnot suggests the controversy of the means justifying the ends. Bassi's stated goal is the protection of Paris against aggressors. But what is "Paris"? Is it the habitat? The people? Their independence? Their way of life? These questions become blurred and lost as Bassi increasingly defines protection as the open defiance of Earth's military. He whips up the crowds using slanted or outright deceptive information, framed by pathos-laden rhetoric. Not only does the effect spread like a groupthink virus, but Bassi also falls prey to his own propaganda: he gets caught up in the patriotic fervor and convinces himself that they can face down the juggernaut and come out standing. Unfortunately, the mob tactics that work so well for pre-war Brazil are a complete disaster for Paris because they do not have the necessary military and logistical networks to support their

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bravado: the "much-vaunted" Parisian artillery amounts to "rudimentary and unsophisticated" ground defenses and "poorly armed amateurs who stood no chance against experienced marines and fighting drones." They have "made themselves sacrifices laid on the altar of their principles" (*QW* 297). It is also arguably true that Bassi, not Earth, destroys Paris, for he presides over the transformation of their democratic eutopia into its antithesis. Had they prevailed against Earth, the city would have been unrecognizable. As Macy says, "[H]ow can it be good if it needs lies to support it?" (*QW* 309).

It is possible that Bassi would not have discarded democracy so recklessly were it not for the influence of the Ghosts. We learn later, in both *Gardens of the Sun* and *In the Mouth of the Whale*, that the Ghosts are indeed acting on instructions from the future, but not exactly for the reasons they claim. Supposedly, their leader Levi is reaching into the past to make sure events turn out as they already (for him) have done. That begs the question, "If everything has already come out okay, then why in the world do you need to interfere?" Perhaps the answer is that this excuse causes everyone to dismiss the Ghosts as crazies, and crazies can get away with more odd behavior than, say, suspected terrorists. What Levi is really doing is trying to change the past (the era of the Quiet War) in order to create a different present for himself and his people, a thousand years after the Quiet War. Although we know little about his strategy, we do know that he hopes to prevent the Ghosts' enemies, the True and the Quick, from ever reaching the Fomalhaut system (*MOW* 295). It is possible that they hope to dramatically weaken or even destroy all unmodified humans in the Solar System. They also need ships and supplies in order to embark on the next step of their master plan, a move *en masse* to the Neptune System. The Quiet War offers exactly the kind of chaos they need to steal ships and escape unseen. As Sada Selene tells Macy Minnot, Marisa Bassi "is a potent instrument" in this plan (*QW* 308). They egg him on and promise their support in the coming battle – a lie, for they grab ships and leave as soon as the fighting begins. It is also possible that many of the specific decisions Bassi makes in dismantling Paris's democracy are initially Sada's idea.

6.3 Conclusion

In retrospect, the most logical strategy for the Outers to adopt would have been to scatter, hide, and use guerilla warfare. In this way, they could have used Earth's own strategy against them by attacking key nodes in their network to render it vulnerable to a modest offensive. This is why a quiet war of sabotage is necessary for Greater Brazil to soften the Outers up: if the Earth powers were simply to declare war and start attacking, the Outers would certainly employ the scatter strategy. That would defeat one of Earth's primary war objectives: not to destroy the Outers, but to force them to aid in the exploitation of their scientific archives. This quiet war proves all too effective: the Outers discover that their backups are insufficient defense against a sustained campaign – they only serve as very temporary buffers. They lack sufficient network structures for military defense and espionage.

CHAPTER 7

TYRANNY AND DIASPORA (circa 2221 – 2229)

7.1 The Three Powers Authority

7.1.1 Administering the Outer System

The aftermath of the Quiet War is similar in some ways to the aftermath of the Overturn, albeit not nearly as severe. The overall network structure of interconnected but sovereign democracies has been disrupted, and many of the institutions that contributed to the old network's stability, such as wanderjahr, are abolished by their new rulers. The new paradigm is one dominated by military and civilian administrators from Greater Brazil, the European Union, and the Pacific Community, who together form a governing body called the Three Powers Authority (TPA). As discussed in Chapter 6, these three powers are uneasy allies for several reasons. First, the Pacific Community is clearly a subordinate member. They are allowed only a few lightly populated, out-of-the-way moons to administer. Second, the bureaucracy quickly bloats to an enormous size, with individual agencies headed by greedy, power-hungry leaders determined to carve out their own little empires in the Outer System. For example, Colonel Malarte "treats Mimas as if it was his personal fiefdom": "the colonel is sending back cargo pods stuffed with loot. He takes by main force anything that attracts his fancy, and if the owners make a fuss he throws them into prison" (*GOTS* 151). This situation is not amenable to centralized control and lends itself to widespread corruption and graft. Third, not only do the EU and Greater Brazil compete for leadership of the TPA, but individuals from each country also compete with each other. Arvam and Euclides Peixoto are obvious rivals, as are family members and non-family members, as groups. For example, Loc Ifrahim, whose actions and counsel contributed to the Quiet War's success, is shunted into an undesirable position running

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Table 7.1 The Three Powers Authority

	THE THREE POWERS AUTHORITY (TPA)	
	GREATER BRAZIL and the EUROPEAN UNION	PACIFIC COMMUNITY
OBJECTIVES	Establish effective, centralized control over the conquered Outers; comb through their libraries and archives for science and technology they can exploit for profit and political/military advantage; keep the PC at a disadvantage as the weakest, unwelcome member of the TPA.	Use position in TPA to establish a base of operations in the Outer System and quietly develop cooperative relationships with various groups of Outers; shift the balance of power in order to reduce GB's and EU's ability to control the Outer System; work to restore independence to the Outers, in return for a mutually beneficial network of economic, political, social, cultural, and technological ties.
ACTORS	Militaries and civilian administrators. Prominent: Arvam Peixoto, Euclides Peixoto, Loc Ifrahim, Sri Hong-Owen.	Military and civilian administrators. Prominent: Ambassador Tommy Tabagee.
ENVIRONMENT	Since GB and the EU have a contentious history with the PC, which joined the war effort at the eleventh hour, they don't trust the PC's motives. They are concerned that the PC will obtain the fast-fusion motor and disrupt the balance of power.	The PC believes that a peaceful, cooperative relationship with the Outers is more desirable and ethical than one born of conquest. They also know that GB and EU will obstruct this goal.
EXECUTION	With the help of a rapidly expanding military and bureaucratic administration, GB and the EU struggle to catalog their winnings and bring the Outers under rigid, centralized governance. They spend more than a year combing the surfaces of various moons to find and destroy hidden refuges and herd all the Outers into the cities, where they can more easily be controlled. They experiment with various prison models, including a high security prison on the Moon for those Outers considered to be the	The PC takes advantage of GB's and the EU's snubs to quietly establish a power base on Iapetus. They rule the Outer residents lightly and work to gain their respect, trust, and cooperation. They build a clandestine network of influence throughout the Saturn System and work assiduously to establish diplomatic ties with the Ghosts and the Free Outers. Their government on Earth also supports dissident groups in GB with money, weapons, and strategic advice in order to weaken GB'S home base.

Table 7.1 - *Continued*

	most dangerous to TPA rule and the most useful assistants in plundering the Outers' stores of knowledge. Sri Hong-Owen studies Avernus's various habitats, or "gardens," for discoveries that can bring profit, but she also has her own agenda – to prove herself Avernus's better.	
OUTCOMES	GB and the EU generally work well together, but the seeds of dissension are sown when the EU objects to GB's forced-sterilization program on ethical grounds. Also, the Outers prove very difficult to govern: they engage in all varieties of non-violent resistance and sabotage against the TPA. Later, the rising tide of rebellion on Earth (aided by the PacCom) endangers the TPA's political and financial support from home.	The PC's quiet network-building pays off with a slow but clear shift of power in the Outer System, which culminates later when the Ghosts attack.

ship salvage operations. Meanwhile, an incompetent, consanguineous family member who did nothing to participate in the Quiet War is promoted above him. Loc makes the most of what he has, proving himself quite an able administrator in the process, but he fumes at the injustice and works behind the scenes to sabotage family members he considers undeserving of their positions.

Having collapsed the Outers' networks in order to take control, the TPA begins building its own governing network. Since their primary goal is to exploit the Outers' stores of scientific knowledge, they must locate those Outers who can best help them compile useful data and tell them what it means. Since they have taken the Outer System by force, they obviously preclude the possibility of willing cooperation; therefore, to expedite the process of locating the people they need, they take several steps. First, they begin rounding up all the Outers and concentrating them in the larger cities. They destroy all smaller habitats and oases they find in

order to deny their comfort to the enemy and force any stragglers to the air and resources (and tyranny) of the cities. Second, they identify and track each Outer under their control in a database. They mine the Net for information about individuals' skills, prior activities, and most importantly, political opinions before the war. Anyone flagged as a possible dissident is either imprisoned or watched very closely, and those with useful skills are pressed into service, often under threat of their and their families' lives. Third, in an attempt to keep subversive activity to a minimum, they impose a very restrictive set of rules and regulations on the Outers. In short, they create a strong, centralized government modeled after their own governments at home but with even tighter controls.

The Outers do not make ruling them easy. They do work to take care of each other and maintain their habitats as they did before, but they also engage in acts of civil disobedience. In Paris, for example, "Almost half the prisoners supported the doctrine of nonviolent resistance and refused to work" as instructed (*GOTS* 35). When the TPA reacts by enacting harsher controls, the problem is only exacerbated: "Refuseniks were subjected to public strip-searches, random beatings, solitary confinement, or even, in the early days, execution. . . . this practice was abandoned when prisoners began to follow the guards and their victims, demanding to be cycled through [the airlock] too." There is also resentment and growing ennui amongst the young Outers as the years pass. No longer allowed to blow off adolescent steam via wanderjahr, many now adopt nihilist philosophies and dissipate their energies with wild partying and experimental sex. Others sustain their spirits with "talk of resistance and revolution," and utopian "fantasies of escape into the outer dark at the edge of the Solar System" (*GOTS* 104). Eventually, the TPA recognizes that clamping down harder and harder will only make the problems worse, and they reluctantly loosen the hand of law enforcement (*GOTS* 35).

Rebuilding the Outer economy on a centralized model also turns out to be much harder than the TPA expects. Their economy had previously been so decentralized that nobody, neither Earther nor Outer, knew exactly how everything had worked; many logistical details and

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small yet important enterprises remain opaque to those trying to weave everything together into a command economy. Perhaps the most serious problem is that much of the economy, particularly relating to critical resources found only on certain moons, had previously relied upon a loosely organized transport system with innumerable independent ships, many of which were destroyed or disabled in the war. It becomes necessary to repair as many of those ships as possible, a time-consuming task. The TPA's sluggish, ponderous progress in building a new logistical network results in widespread unemployment amongst the Outers, not to mention scarcity for everyone involved. This scarcity of resources threatens to make the TPA's position untenable, given their long supply lines and war fatigue back on Earth (see below for more details).

The principal problem here is that the Earth powers have demolished a large network without carefully crafting a new network to replace it. Despite all the planning that went into the Quiet War, they seem to have given very little thought to the next step. They apparently assumed that they would simply transplant the governmental structures they had used with such success on Earth (though even this success is relatively short-lived; see "Problems at Home," below, as well as Chapter 8 for more details). As discussed in Chapter 3, they have violated the principle of unrepeatability. The conditions in the Outer System are diametrically opposed to the conditions that gave rise to the tyrannies on Earth. All of the supporting actants so crucial to the success of the nascent megastates – the people's desperation for survival, their relief at the emergence of leaders who made them feel secure, their guilt over destroying Earth's environment, the slow process of consolidation – are completely absent in the post-war Outer System. The TPA's only hope of maintaining control, short of forging a compromise with the Outers, is tyranny.

7.1.2 Trouble in the TPA

The TPA's trouble from without is matched by trouble within. One specific issue that drives a wedge between the three powers is Greater Brazil's zero-growth initiative, one of the

carrots their militants had used in order to secure the radical greens' support for the Quiet War. The European Union, despite their shared disdain of the Outers, has "moral objections to an enforced mass-sterilization program" (*GOTS* 188). Even worse, the Pacific Community has begun creating a "working partnership" with the Outers and certainly would not condone such a violation of their partners' basic human rights. This issue illustrates the trade-offs driving actors sometimes face when building and mobilizing networks. As McAuley writes, "If Greater Brazil had defeated the Outers by itself, then the zero-growth initiative might already have been rolled out on all the other inhabited moons of the Saturn and Jupiter systems" (*GOTS* 188). But the militants did not defeat the Outers alone, and for that matter could not have without destroying the very resources they wanted to obtain. They needed the radical greens' political support at home and the EU's financial and logistical support in space. The opposing agendas of those two groups now constrain the militants' ability to keep the cooperation of both: to make one happy, they risk alienating the other.

Just as damaging to the balance of power in the TPA is the Pacific Community's quiet expansion of influence in the Outer System. It is "shipping in colonists from Earth, expanding its base on Phoebe, and threatening to annex and settle several of the smaller moons whose few inhabitants had been forcibly removed after the war" (*GOTS* 188). It is also reaching out to the Free Outers, partly in an attempt to build goodwill but more importantly to negotiate for the fast-fusion motor, which Macy Minnot and Newt Jones had stolen from Sri Hong-Owen's ship. Given the Free Outers' vulnerability as a very small network on the run from the TPA, the Pacific Community sees an opportunity for mutual benefit: they offer support and protection in return for the fast-fusion specs. At this point in time, the Free Outers are reluctant to make any kind of concession to an Earth power, particularly because they have not forgotten the Chinese Democratic Republic's genocide against the Martians. The PacCom's persistence and growing opposition to Brazil and the EU, however, eventually pay off (see Chapter 8).

These tensions between the three powers regarding not only the basic objectives of the TPA but also the methods of implementation lead to "a kind of Cold War standoff, prickling with mistrust and paranoia." Ironically, one thing that holds them together is their mutual concern that unilaterally halting the "exploitation of the Outers' scientific and technological knowledge" would grant the other two powers an advantage: "there was the chance that [a rival] might stumble on a fragment of exotic physics, mathematics, or genetic engineering that would become the cornerstone of a new technology as world changing as aeroplanes or antibiotics" (*GOTS* 189). This race to mine the Outers' archives keeps them from pushing their rivals too far and risking loss of access. It also allows Sri Hong-Owen unfettered access to Avernus's gardens, on the promise that she will produce scientific wonders that will give Brazil tactical advantages and make Euclides Peixoto a very wealthy man. In return, she is able to learn many of Avernus's secrets and use them to design her masterwork.

7.1.3 Greater Brazil: Problems at Home

Greater Brazil's footing in the TPA is further weakened by several brewing problems at home. First, the greens are now in ascendancy again. With most of the militants now off-Earth administering the Outer System, the Brazilians at home are beginning to grumble. The strain on Earth's resources is aggravated by an extended drought, and the promised benefits of moving industry off-Earth have not materialized. This is partly due to logistical difficulties, but as mentioned above, many leaders in the TPA see the postwar period as an opportunity to carve out little personal empires: they spend little time worrying about fulfilling campaign promises. The militants may also be taking Earth's continued support too much for granted and leave key actors on Earth out of the informational and decision-making loop.

A major hinge point for Brazil is President Elspeth Peixoto's death. As expected, turmoil erupts: there are "riots in several major cities, renewed fighting with wildsiders along the edges of unreclaimed land, and flare-ups of nationalist activity" (*GOTS* 140). The turbulence subsides when Vice President Armand Nabuco is voted in as president pro-tem. For years, he has quietly

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Table 7.2 Greater Brazil

	GREATER BRAZIL			
	PRES. NABUCO'S ADMIN	OUTER ADMINS	FREEDOM RIDERS	OUTER ADVISORS TO F.R. - MOON
OBJECTIVES	Implement a smooth transition of power after President Elspeth Peixoto's death; sustain financial and political support for operations in the Outer System.	Establish and maintain control in the Outer System, regardless of what happens on Earth.	Weaken and eventually topple the existing regime in GB; replace the family-rule with a form of democracy; prepare networks to support these outcomes.	Advise the Freedom Riders on implementation of democracy in their particular circumstances; in return, gain freedom for themselves and the rest of the Outers.
ACTORS	Pres. Armand Nabuco and his allies, particularly the Office of Strategic Services (OSS), essentially a secret police organization.	Military and civilian administrators. Prominent: Arvam Peixoto, Euclides Peixoto, Loc Ifrahim.	Rebels of all types, particularly in the land formerly designated the United States. Prominent: Alder Hong-Owen, Cash Baker, Louis Fontaine, Col. Bear Stamford, and Avernus.	Misc. prisoners in the Moon facility. Prominent: Amy Ma Coulibaly, Bel Glise, Dave #8 (Felice Gottschalk).
ENVIRONMENT	Droughts and shortages cause citizens to question the necessity of sending scarce resources to the Outer System, regardless of whatever benefits they might be receiving; war fatigue is setting in.	Building a top-down, hierarchical government from scratch with people who do not welcome it is difficult. They also face pressure from Earth, where popular support for the war is rapidly waning.	The Freedom Riders are established in the former United States, where the descendants of rugged individualists resent the despotic rule of the great families.	The prisoners are supervised by fellow prisoners referred to as "Trusties," mostly self-servers whose psychopathic leader demands submissive behavior.

Table 7.2 – *Continued*

EXECUTION	Nabuco's solution to dissension is to crack down harder. His removal of political enemies becomes more and more brazen. Meanwhile, the wealthy's conspicuous consumption creates widespread anger amongst the masses, who are not allowed to leave the city-arcologies even though they are desperately short on food and water.	Bureaucracies multiply rapidly as the TPA struggles to impose their kind of order on the Outer System in the face of resistance; leadership positions are awarded to consanguineous family members freshly arrived from Earth, largely ignorant of the Outer System but eager to plunder it for personal profit.	Plant groves of people trees everywhere they go, thus creating a network of oases across GB that will allow people to survive outside of the cities. Distribute data needles with damaging info about families and instruct-tions on how to live in the wilderness, basic grounding in participatory democratic government. They build a "horizontal, highly distributed organization" highly resistant to disruption.	Outer prisoners skilled with computer networks and secret codes manage to infiltrate the system for small periods of time. They use those opportunities to obtain and secrete supplies that will aid in their eventual escape, as well as to communicate with Alder Hong-Owen and other Freedom Riders on Earth. They advise the Freedom Riders on democracy and make plans for their own rescue once the Brazilian regime falls.
OUTCOMES	This environment is ripe for exploitation by the FRs, who teach disaffected citizens and groups (like the R&R Corps) the true nature of their government and show them how to live outside of the cities. As they become more rebellious,	This carving up of the Outer System into little fiefdoms leads to inefficiencies and intrigues that divide the TPA. People like Loc, who hoped to be rewarded with lucrative promotions, grow bitter at the injustice of keeping everything in the	The FRs gain some ground, but it looks shaky for a while when they suffer some defeats at Nabuco's hands.	Several of their number are discovered and killed, but Dave #8 is finally taken into their confidence and is able to help.

Table 7.2 – *Continued*

	Nabuco's regime cracks down harder, which just feeds the anger of the masses all the more. His control over the nation and his own government unravels.	family. This dissension contributes to the growing weakness of the TPA, especially in context of the growing rebellion on Earth.		

been preparing a replacement network, and in the president's final illness, he begins moving his people into position; meanwhile, he works to eliminate or neutralize his rivals. These steps create such a smooth transition of power that he appears quite effective in those early days. His position is made permanent.

Under other circumstances, Nabuco might have enjoyed a long and successful reign. However, he has designed his administration according to the old paradigm, and the environment has changed; he fails to adapt his style of governance to the tidal shift underway. In the past, the family members and citizens were fairly obedient to family discipline. It was widely accepted that virtually any means were justified by the excuse (however flimsy in some circumstances) that they contributed to Gaia's healing. That key network element is now crumbling due to the strain of an extended space war, the severe drought and rationing, and the passage of time itself. Like the TPA, he responds to growing rebellion and dissent by tightening his grip, which merely exacerbates the problem. We will explore these events in more detail in Chapter 8.

Several important events erode the TPA's support network on Earth. First, Arvam Peixoto and Cash Baker are court-martialed for war crimes. Although there is some indication that Euclides Peixoto instigates this in order to eliminate a rival, the end result is a media circus that portrays the militants as out of control. Euclides believes that this gives him, a civil

administrator, an edge, but the sentiment becomes broadly applied to the entire off-Earth enterprise. The radical greens fan this flame by criticizing the extended drain on Earth's meager resources, especially in the midst of a crippling drought. That leads to the second problem: a young generation of family members who, having never experienced the effects of truly lean times and having been spoiled with luxury growing up, seem to have no sense of responsibility or restraint. They indulge in conspicuous consumption and blatantly exploitative behavior that feed resentment amongst the lower classes: "People are on rations, they're starving, and the young blades are throwing extravagant parties or they're driving around town looking for prole girls to pick up, throwing bread at passersby. And they keep their swimming pools filled and their fountains working while ordinary folk have to queue at bowsers for a drink of water" (*GOTS* 244). Now, instead of war riots, there are food riots in which angry people protest against the double standard. Nabuco's response is to deploy police, military, and R&R Corps to put down the protests, sometimes even using live rounds against citizens, including women and children (*GOTS* 245). These riots pose the first real threat to Greater Brazil's stability and the great families' rule. Revolutionary groups, most prominently the Freedom Riders, use that widespread dissatisfaction to begin building their networks at this time. The Brazilians in the TPA increasingly distance themselves from Earth, a risky move since they do not yet have solid support networks in the Outer System.

7.1.3.1 The Freedom Riders

As the radical greens gain power, they begin passing laws that prohibit any scientific work that can be construed as "against Gaia." As Avernus had warned, Sri Hong-Owen's work fits in this category. Although she is safe enough in the Outer System, her son Alder Hong-Owen, who has been running her research facility in Antarctica, becomes a target. Fortunately, he is well-connected enough that he gets wind of the upcoming raid in time to evacuate his people. A few highly-devoted volunteers remain behind, ready to sacrifice their lives so their leader and their families can escape.

Now uprooted, Alder must decide what to do and where to go. He is not the type of person simply to hunker down and wait for the danger to pass: his mother did not design him that way. Despite the illegality of such procedures on Earth, Sri had genetically engineered her son to be her assistant, to exercise a social dexterity that she lacks and a political sensibility that matches her own. Unlike Avernus's daughter Yuli, engineered to be so superior to normal humans that she has no hope of fitting in, Alder is within the range of normal human capabilities – he is simply near the top in all of the categories Sri needed, such as charisma and ability to read people. Such skills make him a born leader. Having already assembled a network of trusted people, Alder begins building the Freedom Riders, a revolutionary organization whose name conjures the heroic ghosts of the Civil Rights Era. For the next seven or eight years, Alder and his growing network of Riders and allies work patiently to create a tidal shift in Brazilian society, as detailed in Chapter 4: planting an extensive network of people-tree oases, spreading information about the great families' abuses, and, most importantly, teaching people about democracy and how to live in the wilderness. Rejecting the radical green notion that technology is inherently harmful to Gaia, they "had no compunction about using every kind of technology to survive in the wilderness," such as "stills that pulled moisture from air, featherweight sleeping bags, slates and comms equipment that ran on artificial photosynthesis and plugged into what they called a dark net." Much like the innovative young Outers, they develop methods of living that negate the conventional wisdom about the financial and environmental costs of living in the frontier (*GOTS* 249). This utopian enterprise differs significantly from the Quiet War because, however much time they devote to attacking the enemy's network, they spend far more time building a replacement network that will be strong enough to take over when the enemy falls (see Chapter 8).

7.2 The Diaspora

7.2.1 The Free Outers

Two groups of Outers grab ships and escape the Saturn System at the end of the Quiet War: the Ghosts and a group of three hundred or so, including Newt Jones and Macy Minnot, who dub themselves the Free Outers. The Ghosts, we later learn, move to the Neptune System to work on the next stage of their plan, while the Free Outers take refuge on Miranda, one of Uranus's moons whose broken surface offers abundant hiding places. Knowing the TPA will likely be searching for them, they resign themselves to living "by the old maxim of every refugee: silence, exile, and cunning" (*GOTS* 93). Determined to escape tyranny at any cost, the Free Outers venture into the outer dark, far from all supporting networks, in an effort to find a place where they can be free. They are, "Burdened with the responsibility of preserving the knowledge and traditions of their home, of keeping a little candle of democracy flickering in the outer dark" (*GOTS* 91). Theirs is a tenuous utopian dream, an interim rather than a final goal.

Although they begin with a much larger group than Abbie Jones' ill-fated Titania commune (over three hundred versus eleven), they face many of the same problems. As discussed in Chapter 4, the Free Outers have a small network that is quite vulnerable to attrition, especially since they have no backups or potential source of rescue from outside. Had they been left alone on Miranda, it is possible that they might have fulfilled their utopian dreams in time, spreading "into the farthest reaches of the Solar System," including "dwarf planets of the true Outer System and the Kuiper Belt" (*GOTS* 92). After all, they are young, creative, and hard-working, and they begin having babies almost immediately. They begin well enough: for two happy years on Miranda, they create a democratic community, build and test their own fast-fusion motors, upgrade ships, make their tiny habitat into a lovely home, and even do a little pioneering with an expedition to Pluto's moon, Charon. Their happy little utopian bubble is burst, however, when a strike force sent by Arvam Peixoto finds them. Although they have about thirty

days' warning, they still end up losing their four slowest ships, along with sixteen people. They move to Proteus, Neptune System, where they live in the Ghosts' shadow for about six years.

Again, they make the best of their situation, building and improving a new home, having babies, and making plans for the future. Population levels are becoming a more serious problem, however, because despite the births, they have lost many more to death and defection. Many Free Outers defect to the Ghosts because they want the stability of a larger, stronger network (*GOTS* 283). Macy Minnot cannot blame these defectors, since the Free Outers' only remaining defense against aggressors is to "hunker down and hope that they would be overlooked when the war between the Ghosts and the TPA began" (*GOTS* 286). Their little utopia is also shadowed by the sinister threat that the Ghosts might take them captive and force them to be guinea pigs for posthuman experimentation, a development they would be powerless to prevent. Fear of this outcome makes the Free Outers reluctant to make any moves that could anger the Ghosts (*GOTS* 241).

And again, their utopian dreams are cut short by other people's machinations. The Ghosts, determined to instigate yet another war in an attempt to change the far future, invite the TPA to the Neptune System for talks, which they then sabotage. The Free Outers attending the talks barely escape with their lives, and upon returning home, they are faced with a warning from the Ghosts: leave the system within one hour or be destroyed. This is the heaviest blow they have yet experienced. They must not only leave behind yet another painstakingly built habitat but also most of their supplies, including all of their construction robots. They barely have enough time to grab their loved ones and a few bags before darting away like "rabbits scattering from the shadow of a hawk" (*GOTS* 126). Now forced to hide from both the TPA and the Ghosts, they take refuge on Nephele, a tiny centaur moon orbiting above the plane of the ecliptic. Lacking construction robots to mine the surface and build a habitat, they instead spin a bubble habitat that will orbit Nephele.

Table 7.3 The Free Outers

	FREE OUTERS	
	ISOLATIONISTS	EXPLORERS
OBJECTIVES	Find a dark hole and hide there, hoping that the TPA will leave them alone.	Explore and spread throughout the Uranus and Neptune Systems and the Kuiper Belt.
ACTORS	Members of the Free Outers, the survivors who fled to the Uranus System after the Quiet War. Prominent: Mary Jeanrenaud.	Other members of the Free Outers. Prominent: Newt Jones and his motor crew.
ENVIRONMENT	The Uranus System is far away from everything they have known, and far from all potential help and outside supplies. They are a tiny group of refugees totally on their own in the "outer dark." Nevertheless, most of them are young (in their 20s, on average) and optimistic, and very excited that they finally get to be pioneers out from under their parents' shadows, albeit not under circumstances they would have wished.	
EXECUTION	As with most groups of Outers, they solve their differences through debate and the democratic process. They build and maintain their habitat on Miranda as though it will be a permanent settlement, but the motor crew does experiment with the new fast-fusion motor and test it on an exploratory mission to Charon. Although the mission is a success, the isolationists argue that it's too risky to send any more missions right now: they risk spreading themselves too thin. Shortly afterward, the TPA comes after them and they flee to the Neptune System, losing all of their slowest ships in the process. In the Neptune System, they find themselves subordinated to the Ghosts. After six years of living on Proteus, they are uprooted yet again when the Ghosts sabotage peace talks with the TPA and give the Free Outers one hour to leave the system. They then settle on Nephele, a centaur planet far above the plane of the ecliptic. They hope this is finally a "place" where they can be free.	
OUTCOMES	Macy realizes that they are at the end of the line on Nephele. When the Ghosts evict them, they must abandon most of their important capital assets, including construction robots. Many of their number, including some with important skill sets like genetic engineering, have defected to the Ghosts. Now the Ghosts have launched an attack force towards the Saturn System, and nobody knows what they intend. Macy has no faith in hiding places anymore: she recognizes that one more attack will finish them. The isolationists, however, are in firm control, and they blame her (irrationally) in part for their plight. She decides to take independent action by taking Loc with her back to the Saturn System to participate in talks with the Pacific Community, which had previously reached out to them.	

There is no pretending now: their "dreams of exploring human limits, building cities on the moons of Uranus and Neptune, and expanding into the Kuiper Belt had been abandoned. Left behind with almost everything else when the Ghosts had evicted them from their home on Proteus" (GOTS 284). A problem even more serious than the smallness of their immediate network is their distance from any supporting networks. Not only are they far from the heavily-populated Saturn System, but "most of the little worlds beyond the orbit of Uranus hung at even greater distances from each other in a vast cold dark through which the small lives of the Free Outers might fall forever, dwindling to dust and less than dust" (*GOTS* 127). Any network of little societies in the outer dark would be spread much farther apart than those in the Jupiter and Saturn systems, with long trade routes and fewer natural resources at hand. There is some indication that the fast-fusion motor could make this situation more tenable as it greatly reduces travel time, but that does not offset their low numbers and meager resources.

These factors give the Free Outers low odds for long-term success. They cannot agree, moreover, on how to improve their chances. Nobody is willing to return to the Saturn System and throw themselves on the TPA's ungentle mercies. Newt Jones and his motor crew, who had assembled the fast-fusion motor, are in favor of exploring the far outer system (the Kuiper Belt and beyond) and establishing colonies. Mary Jeanrenaud and others believe that this would be a foolish waste of their energies, when nearly every effort is required for mere survival (*GOTS* 97). The reality that neither side wants to face is that neither plan is likely to save them. Their network has become too thin and has too many potential enemies to be sustainable without help. It takes outsiders, Macy Minnot and Loc Ifrahim, to discern the only solution that offers a chance: forming an alliance with a stronger power. Loc points out that their present condition is "a dismal and desperate kind of life. And in any case, it hasn't worked very well for you so far, has it?" He urges the Free Outers to appeal to the Pacific Community. They no longer have the luxury of going it alone: they must plug into a larger network that can provide badly-needed support in return for the fast-fusion motor specs, which will in turn put the Pacific Community on

an equal footing with the other, more aggressive members of the TPA (*GOTS* 332). The Free Outers, incredibly, reject the notion out of hand, whether out of fear or pride. Had Macy not decided to take independent action, it is debatable whether the faltering community would have lasted much longer.

CHAPTER 8

REVOLUTION AND THE NEW ORDER (circa 2229 – 2254 A.D.)

8.1 The Brazilian Revolution

Armand Nabuco does not have long to pat himself on the back for a successful coup. Shortly after he becomes president, he is faced with escalating unrest throughout Greater Brazil. Much like his compatriots in the TPA, he responds by cracking down hard on dissidents. His newly created secret police, the Office for Strategic Services (OSS), "was making mass arrests and transporting trainloads of people to camps in the far south every day, but this was having little effect on rebel activity, and was providing all kinds of ammunition for the pro-democracy movement" (*GOTS* 255). As resistance grows, particularly in the former United States, he declares martial law. Soldiers are ordered to put down protests with as much force as they deem necessary; in one case, they "opened fire on starving people who marched on the mansion of one of the scions of the Escobar family" (*GOTS* 298).

This is a serious political miscalculation on his part. In the past, the great families were able to exert great power, but they were always careful to at least mask it in the guise of religious duty, of healing Gaia. They mitigated their obvious power and privilege by making a good show of sharing in the people's suffering when times were hard. As an R&R sergeant tells Cash Baker, thirty years before, the families "dug up their gardens and parks to grow corn and such. They ate dole yeast like the rest of us, too." But now, "People are on rations, they're starving, and the young blades are throwing extravagant parties or they're driving around town looking for prole girls to pick up, throwing bread at passersby. And they keep their swimming pools filled and their fountains working while ordinary folk have to queue at bowsers for a drink of water" (*GOTS* 245). Even more damning is Cash Baker's video evidence, widely

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Table 8.1 The Brazilian revolution

	GREATER BRAZIL			
	PRES. NABUCO'S ADMIN	OUTER ADMINS	FREEDOM RIDERS	MOON PRISON FACILITY
OBJECTIVES	Try to hold onto power in the face of threats from inside and outside.	Maintain power in the Outer System, regardless of what happens on Earth.	Topple the old regime and replace it with a democratic one.	Aid the Freedom Riders and thus secure their own escape and return the Outers to independence.
ACTORS	President Nabuco and his staff, including the OSS.	Prominent: Euclides Peixoto.	Prominent: Alder Hong-Owen, Cash Baker, Louis Fontaine, Col. Bear Stamford, Avernus.	Prominent: Amy Ma Coulibaly, Bel Glise, Dave #8 (Felice Gottschalk).
ENVIRONMENT	The Freedom Riders have done their work well. High-ranking members of the church have joined in the chorus against Nabuco and the great families, preaching and holding public prayer vigils and peaceful demonstrations.	Control is slipping through their fingers, on Earth and in the Outer System. Failures, scandals, and intrigues plague the increasingly fragmented bureaucracy.	Years of patient work have paid off: the ruling regime in Greater Brazil is weakened, and elements are in place to support a new order.	Extremely hostile, dangerous environment under the leadership of Edz Jealott. Panoptic observation by the EU prison administrators.
EXECUTION	Nabuco, in growing desperation, implements increasingly draconian measures, including instructions to the military to open	Euclides becomes almost a caricature of a tyrant. When the Ghost attack is imminent, he takes the entire TPA	The FRs enlists the church's support which leads to the final crisis, a hinge point in which the military fires upon a massive, peaceful protest led by high-	Dave #8 has a final showdown with Edz Jealott's gang and with a "vat creature" like himself, created by a family in the EU; this buys the rest of

Table 8.1 – *Continued*

	fire on peaceful protestors.	fleet to fight the Ghosts.	ranking clergy.	the clandestine team time while the Freedom Riders complete their tasks on Earth.
OUTCOMES	Mobs, furious at the wholesale slaughter of peaceful protestors, rise up against local and national government offices in a frenzy of revenge. The government collapses.	His attack force fails and is destroyed, taking with it the TPA's main military assets in controlling the Outer System. This completes the shift in the balance of power in favor of the Pacific Community.	The revolution succeeds, and the Fontaine family leads the way to a new democratic system of government.	Alder and Cash go to the Moon to rescue the prisoners. Poor Dave #8 dies en route, but at least he finally gets a few beautiful moments to see the Earth with his own eyes, the Earth he had always longed for and been denied.

disseminated amongst the population, of a ruling family's lavish, illicit hunting lodge. He documents "how Carlos Montoya and his sons spent their time out in the desert, hunting animals reintroduced by the R&R Corps, treating the rewilded land as if it was their own private kingdom" (*GOTS* 250). These events combine to deeply erode the actants that have supported great family rule for over a hundred years. Without this strong network of authority behind him, Nabuco's actions are seen as the tyranny they are, rather than the just exercise of leadership. This leads to a vicious cycle in which Nabuco cracks down on dissidents, which creates more rebellion, which leads him to crack down harder, and so on.

His worst miscalculation comes when he orders the R&R Corps to join in the efforts to repress the angry populace. In the beginning, they reluctantly comply: riots "were put down with brutal force and their ringleaders were given show trials and executed. Cash [Baker] stood shoulder to shoulder with other members of R&R Corps #669 at roadblocks and barricades,

upholding the rule of people who'd done him wrong against people who deserved better" (*GOTS* 247). It is not long, however, before they say, "Enough!" The R&R Corps have no problem fighting against people they can reasonably see as enemies; after all, the wildsiders and bandits are living off the land, which the Brazilians have been taught is anathema. Removing them so that the Corps can move in and heal the damage seems like a religious duty. But turning weapons on starving Brazilian citizens while protecting shipments of fresh seafood for lavish great-family parties – that is unsupportable. When the Freedom Riders show up and give speeches about another way to handle the crisis, the R&R Corps is ready to listen.

The Freedom Riders capitalize on this situation to create a powerful hinge point. As discussed in Chapters 4 and 7, they have been building a tidal shift in Greater Brazil. Now that they have a growing base of grassroots support, as well as a solid network of supplies and shelter, they are prepared to push events toward an explosive conclusion: they reach out to the Church. The successful enrollment of church leaders into their subversive network is what gives them the final momentum to topple the crumbling regime. It is the perfect antithesis to the linchpin of the current regime: the people's belief that living miserable lives in subjugation to the great families and the green saints is their religious duty. The Freedom Riders' support amongst the clergy, combined with the people's abuse at the hands of the regime, destroys that key actant. With a furious populace and a government stretched beyond its means, it takes little to collapse the network.

The tipping point occurs when Nabuco sends troops to put down a protest led by the archbishop of Brasilia. When the protestors refuse to disperse at the OSS's order, "soldiers moved against them with shock batons, kinetic weapons, grasers, and knockdown gas, killing more than thirty and injuring many more" (*GOTS* 336). After that, R&R Corps units begin seizing public buildings and distributing food from warehouses (*GOTS* 335). Having endured war fatigue, drought, severe food and water rationing, forcible confinement to the arcologies,

numerous food riots, and the conspicuous consumption of great-family party animals, the mobs respond with an all-out rampage:

> [M]obs swirled through cities in a delirium of looting. They stormed jails and OSS prison camps, freed every inmate, and set fire to the buildings or systematically demolished them. The branches of people trees along avenues or in squares or plazas were hung with strange and grisly fruit: OSS officers and government officials; men and women accused of being government informers. (*GOTS* 336)

The Freedom Riders allow the mob's fury to run its course before they step in to help clean up the mess. Already exhausted and desperate before they begin their mass riots, the people are in a condition similar to those in the wake of the Overturn: they are receptive to anyone who promises jobs, food, and safety for their children. The Freedom Riders are ready to deliver these reassurances.

Some of the now-hated Peixotos who escape arrest see which way the wind is blowing and make strategic alliances with the great families who participated in the revolution, the Fontaines and the Fonsecas. Together, they issue "a joint statement declaring that they would establish Citizens' Parliaments and hold free and fair elections in their territories, based on the democratic principles developed by Rainbow Bridge, Callisto" (*GOTS* 336). Louis Fontaine provides the public face of leadership for this new order. He boosts his ethos with the crowds by surrounding himself with the heroes of the revolution, such as Alder Hong-Owen and Cash Baker, and providing solid, practical leadership in the immediate clean-up efforts and grassroots logistics. In a speech broadcast nationwide, he asks each apartment complex in the cities to "elect or appoint a representative and each representative would coordinate the efforts of volunteers to maintain order, and would also liaise with ad hoc authorities to set up to run essential services in the cities and take stock of food and medical supplies" (*GOTS* 338). Cash Baker then takes a crew up to liberate the Outer prisoners on the Moon, who commit to helping

them implement a large-scale "democracy in action" (*GOTS* 339). In contrast with the TPA, who won the Quiet War but lost the postwar, the Freedom Riders and their allies have a robust replacement network tailored to Brazil's specific circumstances and ready to implement as soon as Nabuco's administration falls.

8.2 The Ghosts Attack

As news of the revolution in Greater Brazil filters into the Outer System, all sides begin speculating about what this might mean for Brazil's role in the TPA, as well as the TPA's role in the Outer System. The Brazilian leaders feel an increased sense of urgency to strengthen their positions in the Jupiter and Saturn systems, particularly since their erstwhile allies in the European Union refuse to help Nabuco's administration fight the revolutionaries. They are also concerned about the Pacific Community's ever-increasing influence in the Saturn System. As for the Pacific Community, it coordinates a debate to discuss "the future of the Outer System" (347).

Tommy Tabagee invites the Free Outers to attend and participate. Still skeptical of anyone affiliated with the TPA, they debate whether to get involved in any fashion. Loc Ifrahim delivers an impassioned speech about the importance of taking part in this hinge point so as to help "forge a common future" between the peoples of Earth and the Outer System. Macy agrees with him, but the rest of the Free Outers want nothing to do with outsiders. A cautious Idriss Barr argues that "the future meant nothing if they did not survive to see it; before plunging headlong into the unknown, they should wait and see whether or not this revolution was permanent, and what it meant for Greater Brazil and for the Jupiter and Saturn systems" (347-8). Mary Jeanrenaud agrees but for a different reason: she says that the Free Outers "had come out here to make new worlds and new ways of living. . . . They should not be dragged back into the old ways, and they should certainly not be influenced by outsiders" (348). After various others give speeches supporting neutrality, they vote to sit on the sidelines, "to see how things

fell out on Earth and whether it had any effect on the occupation of the Jupiter and Saturn systems before they committed to any kind of negotiations or discussions with outsiders" (348).

In the midst of this turmoil, the Ghosts finally make their big move: they launch an attack force from Triton, heading toward the Saturn System. Their message to the TPA is, "Quit our worlds or suffer the consequences." They seem to be taking tactical advantage of the Brazilian revolution: "Either the Ghosts believed that the TPA was in disarray and might be defeated by a swift and bold attack, or this was some kind of suicide mission by fanatic martyrs, the first shot in a long war of attrition" (348). Of course, it is risky to assume anything about the Ghosts' true motives. We discover in book three, *In the Mouth of the Whale*, that they seek to change their history (the Quiet War's present) so that the Ghosts become "the only posthuman species" (*MOW* 295). The Ghosts' motives matter little to the residents of the Saturn System, however. What matters is that they have just under two months to decide how to address this threat.

Until now, Macy's preference has been to stay out of other people's drama and agendas and simply live her life the best she can – neither using nor being used. Like Dave #8, however, she now realizes that neither individuals nor societies can remain separate from their environments, "secret kings" or "utopian bubbles" floating free of all outside influence (*GOTS* 194, 296). She tells Newt, "Loc Ifrahim is right, and everybody else is wrong. I know I'm an outsider. I know that I still don't understand everything about Outer society, but there isn't any kind of Outer society right now. It's been shattered. And this is our best chance to start to put it back together'" (*GOTS* 348-9). As Luis Schwarcz tells Cash Baker, the TPA had done a great job of destroying the Outers' network, but they have not done such a good job of putting it back together (*GOTS* 34). And as long as the TPA continues to exert its corrupt, centralized stranglehold, the Outers will not have the freedom to put it back together themselves. The only way to truly heal the Outer System is to return power to the Outers.

This is a particularly powerful hinge point because not only have Greater Brazil and the TPA been weakened by the revolution, but the impending Ghost attack also lends a sense of urgency to negotiations that might otherwise have dragged on without resolution. Whether Macy can offer anything valuable in the defense against the Ghosts is less important than her bargaining position with the TPA. Since the other Free Outers refuse to get involved, she takes Loc Ifrahim and the *Elephant* and leaves for the Saturn System. Newt gives her his full support, remaining behind only to care for their adopted children.

En route to Iapetus, Loc contacts an old friend from the diplomatic corps, Yota McDonald, who reveals that "the revolution in Greater Brazil had created a seismic shift in the balance of power at Saturn." The EU, the PacCom, and most of the Brazilians are in favor of negotiating peace with the Outers, but Euclides Peixoto and his cronies want no part of it: Euclides has no intention of giving up the "little empire" he has created for himself. His position is precarious, however, without support from the rest of the TPA or from Earth. The only chance he has of success is "by main force," which did not work so well for Armand Nabuco on Earth (*GOTS* 355). The good news for Loc and Macy is that, with the Ghost threat "overshadowing every kind of domestic problem," the otherwise insignificant Free Outers will be an important voice at the negotiating table due to their information about the Ghosts (355). This tiny network can leverage proportionally greater power due to strategically important information in a particular set of historical circumstances (i.e., the impending Ghost attack).

The Ghost attack itself is resolved by a sort of deus ex machina. Sri Hong-Owen has been working nearby on her "last gift to humanity": a plethora of "seeds," each of which is made from a moonlet (a fragment of a destroyed moon) and has the makings of a bubble habitat with a self-sustaining ecosystem. After Euclides Peixoto's fleet fails to stop the Ghost ships, Sri comes seemingly out of nowhere and destroys them by launching a group of these seeds in their path. Her spokesman, Raphael, explains that, "'She has chosen to sacrifice these seeds for the immediate good'" (373). As everyone watches in relief and awe, she maximizes this

hinge point for publicity by launching the remaining seeds towards the sun. Raphael explains that they will travel to the outer edge of the asteroid belt, spread out, and begin spinning themselves into bubble habitats that will "transform the way people lived in the Outer System" (362). They will be "'a thousand gardens, all different,'" free to "'anyone who wants to live there'" (377).

These ready-made habitats will begin solving the problem that so many Outers have faced: the extreme difficulty of implementing any kind of utopian enterprise off-Earth without possessing significant resources. These thousand gardens can become a thousand different utopias for people with little to no wealth and an inspiration to others who want to build their own places to be free. This is the legacy that Sri hopes will cement her reputation as "'the finest gene wizard who ever lived. Finer even than Avernus'" (377). Less obvious is the possibility that this magnanimous gift is a sort of penance. After all, the Quiet War depended very heavily on technologies she (and her creations, the superbrights) developed: the fast-fusion motor, the Dave clones, and the J-2 singleship pilots. This is not to say that the war would not have happened without her: the tidal shifts on Earth and in the Outer System made something of the kind inevitable. But she played a significant role in the destruction of a society that her idol Avernus had worked so hard to support and protect. In the attempt to prove herself Avernus's superior, she single-handedly saves the people of the Saturn System and helps to make a peaceful resolution possible. Surely this is worth some degree of redemption.

Had Sri not stepped in so conveniently with her seeds, it is still possible that the Outers might have discovered their own solution. Even though Euclides's fleet does not manage to destroy any of the Ghost ships, they do significantly damage the ice shields on two of them, softening them up for further assaults. Macy Minnot also does some fast talking to persuade the EU and PacCom leaders to free the Outer prisoners in Paris. Among the prisoners are pilots, scientists, and creative people of all sorts who might be able to cobble together an effective

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defense. In addition, as Macy tells Tommy Tabagee, "'Maybe they know where ships and caches of weapons were hidden before the Quiet War kicked off'" (366).

Macy's intervention at this juncture is critically important, not only to setting events in motion that may defeat the Ghost attack but also to determining the shape of the networks in the Outer System for the foreseeable future. It proves, as Raphael tells her later, that she is "'a power in [her] own right'" (378). She has correctly recognized the power of this hinge point, as well as the fact that this window of opportunity will not remain open for long. When Tommy Tabagee suggests that they delay the liberation of Paris until the Ghost threat is past, she aggressively disagrees: the time to act is *now*, while there is still time for those Outers to contribute to the Ghost defense. Also, as pointed out above, waiting until the threat is past may result in endless, fruitless delays. This moment is the Outers' best chance to negotiate an end to the TPA occupation. Their position is later strengthened by the near-total destruction of Euclides Peixoto's fleet, which represented "'a large chunk of the TPA's assets'" (365).

8.3 The New Order

McAuley gives few specific details about the new network structures in the denouement; however, we see enough to know that it is a happy ending. Earth and the Outers are enough at peace that Macy and Newt can calmly discuss a possible visit there. Outer society appears to have resumed much as before, with no mention of changes intended to prevent a repeat of the Quiet War. This may certainly be the case. It is human nature to vow "never again" when the pain is fresh but to continue in the same old habits once the threat is past. There are tantalizing hints in the sequel that significant changes will occur, but these changes are difficult to quantify since *In the Mouth of the Whale* is set fifteen hundred years in the future. What we do know from the end of *Gardens of the Sun* is that the human continuum is at peace for now, posthuman tweaks are becoming simultaneously more daring and more accepted, and the "great leap up and out" is now underway, with the departure of Sri and her clade towards the Fomalhaut system and Pete Bakaleinikoff's group to Tierra. Book three

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reinforces the notion that this is a long-lasting happy ending. Explaining to Sada Selene why she decided to leave the Solar System:

> "I grew bored," Sri said. "The Solar System was becoming too crowded with little utopias. My fault. I gave them the oases, the gardens. I don't regret that. But it all became so stiflingly *nice*. One of those pauses in history without wars or any serious conflict. Without anything really interesting going on. So I lit out for the territories, to start over. One of the first to do so." (*MOW* 350)

Although some like Sri do not think so, the majority of utopians are probably quite satisfied with "nice" and would disagree that a "pause in history without wars" means that there is not "anything really interesting going on." Without wars, people are free to pursue happiness in a myriad of ways.

PART FOUR

CONCLUSION

CHAPTER 9

CONCLUSION

9.1 McAuley's Work as an Ecosystem Utopia

McAuley's work is clearly not a traditional literary utopia in the sense of what is normally the subject of utopian studies. As pointed out in the Introduction, the typical object of study is either a single utopia or a primary utopia highlighted by contrast with one or more secondary utopias, usually much more thinly developed. The approach commonly taken with such works is to examine the utopia's social and political structures, particularly as they relate to the social and political structures of the author's time, investigate its reception amongst contemporary readers, trace its influence on subsequent utopists, and determine what kind of utopia it is, whether eutopia, dystopia, critical utopia, anti-utopia, etc. McAuley's universe, however, like many epic space operas, is practically littered with utopias, whose utopian qualities exist not for the sole purpose of praising or condemning a certain social configuration but rather as the ever-changing outcomes of ever-shifting human networks and goals. It is difficult if not impossible to arrange the individual utopias like so many dead butterflies pinned to a display board and neatly labeled; instead, it is more like recording a video of a thousand butterflies flitting about in the forest, rewinding the video, and attempting to analyze freeze frames.

Let us look, for example, at Table 9.1, a composite chart for Greater Brazil that spans the story's five major eras. The simple fact that I had to pick and choose which networks to include in this composite reveals how dramatically the dominant leadership, and by extension the utopian visions, change during this time. I chose for this example to follow the thread of succession involving the secular, militant networks. Juxtaposing the eras helps us to

Table 9.1 The rise and fall of Greater Brazil

	The Overturn: Earth	Recovery and Exploration: Great Families in Brazil	The Quiet War: Brazilian Militant Faction	Tyranny and Diaspora: President Nabuco's Admin	Revolution: President Nabuco's Admin
OBJECTIVES	Survive the aftermath of catastrophic climate change, including the Overturn.	Maintain and increase power and wealth.	Gain wealth and power in the Outer System – better chance to do so than on Earth, where the older generations hold most of the power and resources.	Implement a smooth transition of power after President Elspeth Peixoto's death; sustain financial and political support for operations in the Outer System.	Try to hold onto power in the face of threats from inside and outside.
ACTORS	Pirate families, criminal families, military groups, ecologists, ecological groups, masses just trying to survive.	Great families, descended from the pirates, criminals, and militaries that founded GB (some of whom are still alive and ruling, such as President Elspeth Peixoto and her husband Maximilian Peixoto).	Young family members (such as Arvam and Euclides Peixoto) and ambitious non-family (such as Loc Ifrahim and Sri Hong-Owen).	Pres. Armand Nabuco and his allies, particularly the Office of Strategic Services (OSS), essentially a secret police organization.	President Nabuco and his staff, including the OSS.
ENVIRONMENT	Collapse of early 21st century nation-states due to catastrophic climate change; the Overturn; oil wars, droughts, megastorms, dust bowls, crop failures; masses of dying and desperate people; sense of chagrin	The population has grown accustomed to life in the city-arcologies, under the rule of the great families; enough time has passed that they have confidence in their rule, and not enough	Increasing dissatisfaction among young family and non-family seeking power; insufficient war resources without support of another nation, such as the EU; the peace	Droughts and shortages cause citizens to question the necessity of sending scarce resources to the Outer System, regardless of	The Freedom Riders have done their work well. High-ranking members of the church have joined in the chorus against Nabuco and the great families, preaching

Table 9.1 – *Continued*

	and responsibility; utopian outlook - willing to sacrifice freedom for security / survival / healing the Earth.	time has passed for them and their children to forget what it was like to fear for their survival; the families have made at least a show of sharing the suffering of the people, making sacrifices in times of privation; perceived danger from the unpredictable climate and from intermittent clashes with the PacCom, and proof that the green projects do bear some fruit, keep the people at least marginally content with their lot.	faction is an obstacle.	whatever benefits they might be receiving; war fatigue is setting in.	and holding public prayer vigils and peaceful demonstrations.
EXECUTION	People's willingness to sacrifice freedom and desire to heal the Earth enables the ambitious and the unscrupulous to grab power on an unprecedented scale (formation of megastates); development of institutions to support ecological remediation projects: new green theology (mixture of Catholicism and	The military spends time and resources conquering new lands (justified by the "need" to heal the land), sometimes as much as ten years of fierce fighting against bandits and wildsiders for a single swathe of land (such as the area	Assassinate doves; employ propaganda appealing to religious interests, which cuts support from peace-supporting greens; aid EU militants; give EU tech in exchange for support; wage a "quiet war" using diplomatic relations as a cover;	Nabuco's solution to dissension is to crack down harder. His removal of political enemies becomes more and more brazen. Meanwhile, the wealthy's conspicuous consumption creates widespread anger	Nabuco, in growing desperation, implements increasingly draconian measures, including instructions to the military to open fire on peaceful protestors.

Table 9.1 – *Continued*

	Gaia worship), R&R Corps, military, ecological research, ecological data-gathering networks, green saints (with incredible power, authority, and latitude to implement "pharaonic projects").	around Lake Champlain, where Macy's R&R Corps is deployed).	sabotage the biome project on Callisto.	amongst the masses, who are not allowed to leave the city-arcologies even though they are desperately short on food and water.	
OUTCOMES	Successful coalition of the world into three megastates is ongoing; large swathes of territory are still yet to be conquered and are typically inhabited by marginal groups, like bandits and wildsiders; green saints extend their control over the populace and the Earth's ecosystems; large populations are squeezed into city-arcologies with miserable living conditions (but tolerate it because they believe it's necessary); tightly- centralized, authoritarian, hierarchical (feudal) regimes develop; R&R Corps units enjoy slow success, but their toil is often rewarded by the rapid destruction of their work by storms or wildfires, while elsewhere, nature seems to heal itself without help; gradually, life in the megastates stabilizes, which allows them to once again set their sights on those who left Earth.	The constant military action, as Loc Ifrahim says later (in *GOTS*), makes for a strong military and a strong military-industrial complex; it also makes it possible later for militant factions to take control, both here and in the EU; the families are strengthened, but as new generations arise, the dedication of family members to at least the appearance of fairness towards the people erodes, and the younger generations chafe under the control of their long- lived elders; non-family members, who are "owned" by families and have little say in how to live their lives and direct their careers, are becoming disaffected (tidal shifts).	The Quiet War is a success; the aftermath is less so (see next chapter).	This environment is ripe for exploitation by the FRs, who teach disaffected citizens and groups (like the R&R Corps) the true nature of their government and show them how to live outside of the cities. As they become more rebellious, Nabuco's regime cracks down harder, which just feeds the anger of the masses all the more. His control over the nation and his own government unravels.	Mobs, furious at the wholesale slaughter of peaceful protestors, rise up against local and national government offices in a frenzy of revenge. The government collapses.

see the trajectory from the early, chaotic days of the Overturn, through the process of expanding and consolidating power, through the military's ascendancy, their subsequent absence from Earth during and after the Quiet War, the concomitant weakening of their faction and allies on Earth, President Nabuco's desperate use of increasing force in the attempt to maintain power, and the final collapse of the militant regime. In some cases, such as the Overturn and the severe drought in the years following the Quiet War, we see the nature continuum at work influencing utopian objectives, execution, and outcome. Specifically, these extreme climate events are the direct result of human activity upon the physical environment. The resulting perturbations in the physical ecosystem have a significant ripple effect into all aspects of the social environment because the weather and other natural resources form the base upon which the social superstructures depend. Thus do we see the immediate and long-term effects of mutual construction between the physical and social aspects of the biosphere. In another case, the aging of one generation and the rise of younger generations create new social dynamics that also have significant ripple effects upon the network. In this, Brazil experiences a tidal shift very similar to the one amongst the young Outers. Itching to build their own utopias and empires, they chafe under the tyranny of their long-lived ancestors. Some of these young Brazilians, such as Arvam and Euclides Peixoto, play important roles in the rise of the militant faction, including involvement with the assassination of key members of the peace faction high in the Brazilian government.

It is quite evident, therefore, that understanding Greater Brazil is not a matter of analyzing it at a single point in time, or even as a single utopia. It is an extremely complex network comprising several distinct subnets whose driving actors vie for control, not only of each subnet but for the leadership of Greater Brazil itself. Even then, the driving actors alone do not determine the vision which directs the big ship: the historical, political, and physical environments in which they come to power influence the execution phase and may, in fact, jolt the reins right back out of their hands. Let us not forget also that in addition to the large subnets

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are innumerable smaller networks, both central and marginal. These affect the network at large and are often utopian enterprises in their own right. And Greater Brazil, for all its complexity, is only one-third of the Earth ecosystem of utopias, which in turn accounts for an ever-shrinking percentage of the ecosystem spreading throughout the Solar System and beyond. A methodology such as econet criticism, which can account for network structure and dynamics at all scales, is necessary.

<div align="center">9.2 McAuley's Utopianism</div>

Even though McAuley demonstrates a preference for certain utopian behaviors over others, he unflinchingly portrays both the positive and the negative aspects of each utopian enterprise. His work resists a clear conclusion regarding the "one best way" to live, à la Frederick Taylor. As such, the ecosystem utopia completes (at least for now) the continuum of literary utopias which, at the other end, features the blueprint utopia. As with Moylan's critical utopia, "perfect" and "permanent" are, if not impossible, then highly improbable. That is why the ecosystem of utopias emphasizes the utopian impulse and provisional, dynamic utopias, rather than the utopia as *fait accompli*. Although there will always be problems in society, human beings will always strive for something better, for whatever they consider "the good life" to be.

McAuley does clearly think that the Outers' array of independent democracies is preferable to the centralized societies on Earth, for freedom is always preferable to tyranny. But not only is Outer society vulnerable, it also contains the seeds of tyranny within it, as evident in the repressive community East of Eden. We are not our system of government, and we are not our society: each human being has the capacity for freedom and tyranny within himself. Since societies are not static, people living under tyranny will eventually seek something better, and people living in freedom will eventually tend toward centralizing patterns.

The issues surrounding posthumanity intensify the tensions between centripetal and centrifugal forces in McAuley's societies. More accurately, posthumanity is a multipurpose tool that can serve either tendency. When Avernus creates new genetic templates and tweaks, for

example, she makes them freely available for people to use as they wish. Her ethos is one of a highly decentralized freedom of choice. In other hands, however, posthumanity becomes a sophisticated form of slavery in the service of a centralizing, hegemonic power. The Daves, for example, are carefully designed and trained to be the perfect saboteurs as part of the Quiet War strategy. They are brainwashed in order to prevent the exercise of free will and to make them obedient servants of the State. Likewise, in book three, the True (unmodified humans) defeat and enslave the Quick (a peaceful clade of posthumans) and modify them to be genetically subservient to their new masters. Not only do these posthumans have a societal structure that enslaves them, but they also have a biological structure that enslaves them – a much more insidious and hermetic type of slavery reminiscent of *A Brave New World*. Yet again, however, we have no final, simple answers, for life does find a way. Dave #8 falls in love and defects to the Outer System. Ori, with the help of one of Cthuga's sprites, manages to free her people. Much like the development of nuclear weapons in the twentieth century, the mere existence of posthuman technologies creates a burden on all members of a utopian society not only to educate themselves on the technology's positive and negative potentials but to craft a new morality regarding its use in a way consistent with the utopia's objectives.

9.3 Implications for Utopian Studies

Econet criticism is not intended to supplant but rather to supplement the established modes of analysis in utopian studies. Once an ecosystem of utopias undergoes a macro-analysis of the type in Part Three of this thesis, it is certainly fruitful to analyze individual utopias in much the same way as we always have, albeit with some additions.

There are three fundamental shifts in theoretical thinking inherent in this approach. First is a keener sensitivity toward early manifestations of the utopian impulse in a given nexus or enterprise. This concept is prerequisite to the analysis of dynamic, interlinked utopian networks. Second is the recognition of an additional stage beyond those demarcated by Tom Moylan. Literary utopias have generally followed a trend from closed/totalizing through open/ambiguous:

Moylan's systematic utopia, heuristic utopia, and critical utopia, now followed by the ecosystem utopia. This historical trend indicates a growing demand amongst utopists and readers for greater realism and rigor, the utopian writing itself constituting a utopian enterprise that seeks to reconcile utopianism with the complexities of real life. Third, and related to the previous point, is the recognition that no utopia is an island: each is connected in innumerable ways to other utopias, other networks, and the universe at large. Analysis of any utopian enterprise should recognize that it must contend with a wide variety of influences from without, as well as dynamics within that are inevitable due to the universal rhythms of life. There is no such thing as a static utopia, and neither is there such a thing as a utopia with impermeable borders. In the quest to account for this fuzzy set of relationships, utopian studies can continue to benefit from cross-pollination with ecology, in both its physical and social aspects. It should also cultivate a closer relationship with various forms of network analysis, which itself is a rapidly growing field in today's high-tech social networks.

9.4 Further Development of Econet Criticism

McAuley's work suggests a set of ecological principles that govern human society, including, of course, utopias. For example, he suggests that utopianism goes awry when its driving actors do the following:

- Attempt to recapture a historical state or "paradise" without extensive tailoring to current conditions;

- Fail to build a network sufficient to support the utopia;

- Attempt to build a network that does not take the environment (broadly construed) into account;

- Fail to plan for aggressors from without;

- Fail to plan for dissension from within;

- Fail to provide mechanisms for navigating change; and/or

- Attempt to control everything (there is no "master" of all actants in a network – it is a "sea of actants" over which an individual person or group has limited control).

These principles and others deserve further exploration, context, and critique, both on their own account and as they form some of the foundational principles of econet criticism. In addition, the methodology I have outlined and demonstrated here would benefit from significant revision, partly to increase the rigor and accuracy of its application of ecological and network theories, but also to engage perspectives from a wider pool of scholars. I envision econet criticism developing into a bridge that connects ecology with network theory and eventually becoming a major umbrella theory in its own right, one composed of a loosely-affiliated constellation of approaches that root their methodologies in empiricism and seek to account for the rich interconnectivity of all things. For the utopian scholar, such a methodology is appropriate for a genre that has ambitions to be as complex as life itself.

APPENDIX A

MCAULEY'S ECOSYSTEM OF UTOPIAS

MCAULEY'S ECOSYSTEM OF UTOPIAS

The following outline illustrates the various nested networks in McAuley's ecosystem of utopias. It does not address links between non-nested utopian enterprises, nor does it address dynamics. Refer to Part 3 for relevant analyses.

I. The Solar System
   a. Earth
      i. Greater Brazil
         1. Central networks
            a. The great families
               i. The Peixoto family
                  1. Older generation
                  2. Younger generation
               ii. The Fontaine family
               iii. The Nabuco family
            b. The greens
               i. The green saints
               ii. Other green scientists and activists
                  1. R&R Corps
               iii. The radical green faction
               iv. The Church
            c. The militant faction
               i. Militant family members, especially the younger generation
               ii. Radical greens
               iii. The Quiet War think tank
               iv. Secret projects (Sri Hong-Owen and others)
                  1. The Dave clones
                  2. The J-2 singleship project
                  3. The superbright facility
            d. The masses
         2. Marginal networks
            a. The Freedom Riders *becomes a central network over time
            b. The Church of the Divine Regression
            c. Wildsiders (numerous independent groups)
            d. Bandits (numerous independent groups)
      ii. The European Union
         1. Central networks
            a. The great families
            b. The greens
               i. The green saints
               ii. Other green scientists and activists
            c. The militant faction
            d. The masses
      iii. The Pacific Community
   b. The Outer System

i. The Outers
1. The Jupiter System
    a. Callisto
        i. Rainbow Bridge
            1. Main citizenry
            2. Biome project
                a. Outers
                b. Brazilians
                    i. Peace supporters
                    ii. Militant saboteurs
        ii. Misc. independent habitats
    b. Ganymede
        i. East of Eden
            1. Leadership
            2. Main citizenry
            3. Cosmo angels
            4. Refuseniks
        ii. Misc. independent habitats
    c. Europa
        i. Minos
            1. Underground ocean (with seal people)
        ii. Misc. independent habitats
2. The Saturn System
    a. Dione
        i. Paris
            1. Marisa Bassi and other militants
            2. Peace supporters
                a. Avernus and her crew
                b. The Permanent Peace Debate
        ii. Jones-Truex-Bakaleinikoff clan
            1. Older generation, in favor of peace
            2. Younger generation, "Get out of our sky" crowd
            3. Pete Bakaleinikoff and his Tierra crew
        iii. Conference habitat
        iv. Misc. independent habitats
    b. Titan
        i. Tank Town
        ii. Avernus's caldera
        iii. Misc. independent habitats
    c. Iapetus
        i. Pacific Community base
        ii. Misc. independent habitats
    d. Enceladus
        i. Baghdad
        ii. Misc. independent habitats
    e. Mimas
        i. Camelot
        ii. Misc. independent habitats
    f. Janus
        i. Sri's clade
        ii. Misc. independent habitats

       g.   Rhea
            i.   Xamba
           ii.   Misc. independent habitats
       h.   Tethys
            i.   Athens
           ii.   Sparta
          iii.   Misc. independent habitats
       i.   Saturn
            i.   Deep Eddy

  ii.   The Three Powers Authority
      1.   Greater Brazil
         a.   Jupiter System
            i.   Governors of individual moons
         b.   Saturn System
            i.   Ship salvage operation
           ii.   Governors of individual moons
      2.   The European Union
         a.   Jupiter System
            i.   Governors of individual moons
         b.   Saturn System
            i.   Governors of individual moons
      3.   The Pacific Community
         a.   Saturn System
            i.   Governors of individual moons
      4.   Earth's Moon
         a.   Jointly administered prison facility

 iii.   The Far Outer System (marginal groups)
      1.   The Ghosts (Triton, Neptune System)
      2.   The Free Outers
         a.   Isolationists (slow growth)
         b.   Pioneers (rapid expansion)

APPENDIX B

TIDAL SHIFTS, HINGE POINTS, AND POWERS IN THEIR OWN RIGHT

TIDAL SHIFTS, HINGE POINTS, AND POWERS IN THEIR OWN RIGHT

The following lists collect in one place what I consider the most significant tidal shifts, hinge points, and "powers in their own right" in McAuley's novels. Many of these are analyzed at length in Part 3.

TIDAL SHIFTS

- The Overturn – deteriorating climate change that culminates in a significant hinge point
- Younger generations (both Outers and Earthers) chafing against long-lived ancestors who have hoarded power and resources
- Militant takeover in Greater Brazil and the European Union
- Technological progress, in general – it can't be stopped. If Sri Hong-Owen had not created the Dave clones, someone else would have done something similar. As Tommy Tabagee said, "Information wants to be free." Specific changes: increasingly radical posthumanity, the differentiation of the human species, the great leap up and out.
- Popular dissatisfaction on Earth with the never-ending sacrifice of living in the arcologies
- War fatigue on Earth
- The Freedom Riders' preparations for revolution

HINGE POINTS

- The tipping point of the Overturn
- The New Zealanders' decision to leave Earth and colonize the Moon and Mars
- The genocide on Mars
- Abbie Jones's return from a four-year solo voyage in the far Outer System
- The murder of Emmanuel Vargo
- Macy's defection to the Outers
- The Daves' first unsupervised trek on the Moon's surface
- Arvam's order to Dave #8 to kill Father Solomon
- Sri Hong-Owen's assassination of Oscar Finnegan Ramos
- Sada Selene helping Macy to escape East of Eden with Newt Jones (leaving to join Ghosts)
- Dave #8 meets Zi Lei; spares the life of an Outer, who then shoots him in the shoulder, which weakens him; hesitates at a crucial moment, enabling Yuli to subdue him, so he fails part of his mission and is recaptured; decides to defect to search for Zi Lei; refuses Dave #27's offer to return to the fold, kills him, and is put in EU prison; accepts offer of going to Moon; helps the Freedom Riders' advisors neutralize their guards
- Cash Baker's decision to attack Avernus, Newt, and Macy's ship as they escape the Quiet War
- Sri's pursuit of Avernus, saving her, Newt, and Macy just in time from Cash's attack
- Newt and Macy's theft of the fast-fusion motor specs
- Radical greens raid Sri's Antarctic facility, uprooting Alder
- Alder founds the Freedom Riders
- Arvam Peixoto and Cash Baker are dishonorably discharged; AP commits suicide; Cash joins uncle's smuggling operation
- Cash joins the Freedom Fighters
- The motor crew's determination to build, test, and install the fast-fusion motor, despite the skepticism of some of the Free Outers (it saves their lives when the TPA comes)

- The Free Outers' decision to move to the Neptune System (gives them experience with the Ghosts, which gives them a negotiating chip with the TPA)
- Macy connects with Tommy Tabagee, which gives her a way into the negotiations later
- The Ghosts sabotage talks with the TPA and kick the Free Outers out
- Macy rescues Loc after the Ghosts sabotage talks
- Nabuco orders soldiers to fire on peaceful protestors
- The Brazilian revolution succeeds
- Tabagee invites Free Outers to debate
- Ghosts launch attack
- Macy decides to attend debate, despite opposition from other Free Outers; kidnaps Loc and takes him with her
- Macy negotiates the liberation of Paris
- Sri defeats the Ghosts with her seeds

PEOPLE WHO ARE POWERS IN THEIR OWN RIGHT

- Macy Minnot
- Avernus
- Sri Hong-Owen
- Alder Hong-Owen
- Loc Ifrahim
- Arvam Peixoto
- Euclides Peixoto
- Sada Selene

APPENDIX C

ROUGH TIMELINE OF *THE QUIET WAR*

AND *GARDENS OF THE SUN*

ROUGH TIMELINE OF *THE QUIET WAR* AND *GARDENS OF THE SUN*

The following timeline does not purport to be a complete timeline or even an accounting of the most significant events. Instead, it features events for which McAuley identifies the exact year or gives clues to relative timing. Some years are firmly established; approximations are identified with a tilde (~). Crisis periods (major hinge points) are indicated with a gray background.

~2020 A.D. QW minus ~201 years	• Avernus (Barbara Reiner) is born in San Diego, CA.
~2025 A.D. QW minus ~196 years	• Elspeth Peixoto, future president of Greater Brazil, is born.
~2068 A.D. QW minus ~153 years (these events may be off by a couple of years)	• Amy Ma Coulibaly is born around this time in New Zealand. • Athena, a tented city, is built on the Moon as a way for the rich to escape the devastating effects of climate change. • Avernus and other wealthy people and scientists move from New Zealand to the Moon. • Oscar Finnegan Ramos meets Avernus at a conference about metabolic pathway design in the first vacuum organisms.
~2069-72 A.D. (?) QW minus ~152 years (this may be off by a couple of years)	• THE OVERTURN
~2084 A.D. QW minus ~137 years	• Gunter Lasky is born.
~2090 A.D. (?) QW minus ~132 years	• Earth's new tyrants, having consolidated their new power, now set their sights on the Moon.
~2119 A.D. QW minus ~98 years	• Settlers on the Moon and Mars flee to the Jupiter System to escape Earth's attacks. • The Chinese Democratic Republic bombs the remaining settlers on Mars. • Rainbow Bridge, Callisto, the oldest and largest settlement in the Outer System, is founded.
~2120 A.D. QW minus ~97 years	• Outers begin settling the Saturn System around this time.

~2140 A.D. QW minus ~75 years	• According to Gunter Lasky, he and Avernus have a relationship around this time.
~ 2143 A.D. QW minus ~ 78 years	• 1st manned expedition to Charon (Pluto's moon).
~2164 A.D. QW minus ~57 years	• Elspeth Peixoto becomes president of Greater Brazil when her husband dies.
~2188 A.D. QW minus ~33 years	• Maximilian Peixoto sets up the first embassies in the Outer System.
~ 2196 A.D. QW minus ~ 25 years	• Failed commune on Titania (Uranus's moon).
~2200 A.D. (?) QW minus ~ 21 years	• According to Gunter Lasky, Avernus produces Yuli around this time via an ectogenic tank (not sure if this info is accurate, since some of what Lasky told her is proven later to be lies).
2209 A.D. QW minus ~12 years	• Cash Baker enters flight academy.
2210 A.D. QW minus ~11 years	• Cash graduates flight academy.
~ 2212 A.D. QW minus ~ 9 years	• Greater Brazil begins making overtures to the Outers.
~ 2212-13 A.D. QW minus ~8 years	• Cash flies air support for Arvam's campaign against bandits around the ruins of Chicago.
~ 2218 A.D. QW minus ~2+ years	• Cash is selected for the J-2 singleship program; Cash is 26 years old. • Maximillian Peixoto dies.
~ 2219 A.D. QW minus ~ 2+ years	• Macy arrives in Rainbow Bridge; works for a time; is framed for murders; defects. Loc is 25 years old.
~ 2219 A.D. QW minus ~2 years	• Sri arrives on Callisto with Alder. Alder is almost 16 years old. They stay a while; attend the biome quickening ceremony; the biome project collapses and the Earthers are deported. • Macy stays in East of Eden for a while; escapes with Newt and Sada. • Sada joins the Ghosts. Newt is ~ 25 years old.
~ 2219-20 A.D. QW minus ~1 ½ years	• Loc joins the Quiet War planning committee; works there about a year before returning to the Outer System.

~2219-20 A.D. QW minus ~1 – 1 ½ years	• Avernus moves to Paris.
~ 2220-21 A.D. Right before the QW	• Macy meets Yuli and Avernus; broadcasts their interview on the nets; Marisa Bassi is furious. • 18th Conference on the Great Leap Up and Out; Loc kills a Ghost; he and Macy are arrested by the Ghosts and interrogated for ~ 6 weeks. • Dave #8 arrives in Paris; begins sabotage. • Macy and Loc are moved to a prison just outside of Paris.
~ 2221 A.D. THE QUIET WAR	• Earth attacks Paris, Dione. • Prisoners escape; Loc returns to Paris; etc. • OUTER DIASPORA
~2221 A.D. Right after the QW	• Dave #8 defects (takes 50 days to get to Dione, then 40+ to get to Paris by foot/rolligon). • Arvam asks Sri to fix Cash
~2221-22 A.D. QW plus ~ 1 - 3 months	• Cash wakes up, begins rehab. • Free Outers arrive at Miranda (Uranus's moon). • Dave #8 arrives in Paris; joins prisoners and helps with postwar cleanup in hopes of finding Zi Lei there.
~2222 A.D. QW plus ~5 months	• Dave #8 et al finish main postwar cleanup of Paris, Dione. He works his way into "trusty" status in order to get information. He stays an unspecified amount of time (perhaps two months longer?), then leaves for Iapetus, a 100-day journey.
~2222 A.D. QW plus ~1 year	• Loc is in charge of ship salvage; Yuli is found; she is a prisoner for several weeks, then killed. • Dave #8 arrives on Iapetus around this time and spends more than 400 days there looking for Zi Lei. • Sri takes over the Jones-Truex-Bakaleinikoff habitat around this time and brings Berry with her.
~2223 A.D. QW plus ~2 years	• Free Outer expedition to Charon. • TPA ship approaches Miranda; Free Outers flee; slower ships are destroyed. • Dave #8 leaves Iapetus around this time, going to Rhea (a 72-day journey). • Berry turns 16 around this time, applies for the Air Defense Force, is turned down. Blames Sri, lots of fights, moves to Paris to get away from her and gain some freedom.
2223 A.D. QW plus ~2 years	• President Elspeth Peixoto dies; Armand Nabuco takes power, with the help of his OSS. • Arvam Peixoto and Cash Baker are brought before the Senate for

	questioning about the Quiet War. Cash is dishonorably discharged; drifts for a while. Arvam commits suicide.
~ 2223-24 A.D. QW plus ~2 – 3 years	• Cash begins working for his uncle, smuggling. • Sri's research facility in Antarctica is raided; Alder escapes and goes underground. • Dave #8 arrives on Rhea around this time; kills Dave #27; is captured by the European Union and put into prison in Xamba, Rhea.
~2224 A.D. QW plus ~3 years	• Free Outers arrive in the Neptune System; begin settling on Proteus. • Newt and Macy get married; discover that they're genetically incompatible; could tweak Macy's eggs, but the only Free Outer gene wizard capable of it has defected to the Ghosts. • Alder joins or forms the Freedom Riders around this time; distribute/plant people tree seeds, make alliances with marginal peoples (wildsiders, etc.), begin teaching people about revolution and democracy.
~ 2227 A.D. QW plus ~6 – 7 years	• Luiz Schwarcz visits Cash; this is when he's working for his uncle, smuggling.
~2228 A.D. QW plus ~7 years	• Pacific Community delegation arrives in the Neptune System.
~2228-9 A.D. QW plus ~7 – 7 ½ years	• Cash joins the Freedom Riders. • Dave #8 is about 5 years into his prison sentence in Xamba, Rhea; is working as a trusty, guarding other prisoners; is given the opportunity to go to the Moon, be a trusty there, and have his sentence commuted after ten years there; he takes it. He has an adverse reaction to hibernation and learns that he probably won't survive to the end of his remaining ten-year sentence.
~2229 A.D. QW plus ~8 years	• Loc and TPA delegation arrive; Ghosts sabotage talks, kick the Free Outers out of the system. Loc is 35.
~2229-30 A.D. QW plus ~8+ years	• (Takes 58 days to travel to Nephele): Free Outers (and Loc) settle on Nephele. • A new batch of prisoners arrives on the Moon – political hostages, Armand Nabuco's personal ace in the hole to bargain with in case his regime is toppled.
~2229-30 A.D. QW plus ~8 ½ years	• Ghosts launch attack force. • Macy takes Loc, leaves for Saturn System (63 days to travel there); Ghosts will arrive 5 days later. • GHOST ATTACK IS DEFEATED; NEW POWER STRUCTURES EMERGE.

~ 2230 A.D. QW plus ~9 years	• Newt & Macy's biological son, Darwin, is born. • Berry tries to visit Sri, and she refuses to see him. He isn't told that she *can't* see him because she's struggling with dangerous cancers, the side effect of one of her longevity experiments. He thinks she has just rejected him.
~2232 A.D. QW plus ~11 years	• Berry establishes himself in a hotel in Camelot, Mimas.
~2242 A.D. QW plus ~21 years	• Avernus's funeral. 23 years after Alder visited Callisto with Sri; Alder is ~39.
~2246 A.D. QW plus ~25 years	• Sri and the clade depart the Saturn System, bound for Fomalhaut.
~2254 A.D. QW plus ~33 years	• Newt and Macy attend the 60th Conference on the Great Leap Up and Out. It's 12 years after Avernus's funeral. They have been married around 30 years. Their son Darwin is 25 years old. Sri's ship is now somewhere in the edges of the Solar System. Pete Bakaleinikoff and some others departed an unspecified time before for Tierra, a planet in the Delta Pavonis system.

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