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Of Snails and Salvation: The Theological Construction of John Thomas Gulick's Theory of Evolution

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AUTHOR'S ACCEPTED MANUSCRIPT

Abstract

The Christian missionary John Thomas Gulick (1832–1923) has long been recognized as an important evolutionary theorist. Most recently, his scientific contributions have been commended by biologists skeptical of the sufficiency of pan-adaptationist accounts of evolution. While Gulick's scientific work has been noticed, his theological and metaphysical commitments have been largely dismissed, ignored or downplayed. This paper argues that this not only marginalizes what for Gulick was of central importance but has distorted historical accounts of his theory of evolution. In the portrait drawn here, Gulick's understanding of evolution emerges as a significant example of the creative interplay between theological and evolutionary ideas and explanations in the early twentieth century. Gulick's intellectual influences, his theological vision and his opposition to fatalism combined to form a lifelong quest to understand both snails and salvation.

Key Words

John Thomas Gulick, evolutionary theory, theology, metaphysics, organisms, agency, religion and science

Running Head:

Of Snails and Salvation

[FIRST LEVEL HEADING] INTRODUCTION

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John Thomas Gulick (1832–1923) has long been recognized as an important evolutionary theorist. As early as the 1890s, George John Romanes hailed Gulick’s theory of divergent evolution as having a “higher value ... than any other work in the field of Darwinian thought since the date of Darwin’s death.” Gulick’s and Romanes’s own accounts of different types of isolation as drivers of species change had, in Romanes’s view, begun a new chapter in the development of Darwinism. Gulick’s detailed work on the dynamics of reproduction and segregation within a community of organisms had unveiled, Romanes believed, “a principle so fundamental and so universal that even the great principle of Natural Selection lies less deep.” If that was not dramatic enough, Romanes went further and argued that alongside heredity and variation, Gulick’s work had confirmed isolation in all its myriad forms as the “third pillar of a tripod on which is reared the whole superstructure of organic evolution.”¹

Gulick’s contributions continued to be referenced, albeit in less superlative terms, throughout the twentieth century. At the beginning of the century Vernon Kellogg’s influential book, *Darwinism To-day*, dealt sympathetically with Gulick’s theory of divergent evolution over several pages even if it pulled back from the exuberant endorsement given to it by Romanes. Given the highly elaborate nature of Gulick’s theoretical edifice, it is not surprising that Kellogg’s summary was partial. In highlighting Gulick’s account of “indiscriminate isolation,” which resembled what would later be termed genetic drift, Kellogg missed much of significance, not least the role given by Gulick to organisms in directing their own evolution.² Similarly sympathetic and equally selective summaries appeared mid-century in

¹ George John Romanes, *Darwin, and After Darwin III: Post-Darwinian Questions. Isolation and Physiological Selection* (Chicago: The Open Court Publishing Company, 1897), 1–2.

² On genetic drift and Gulick’s role in the development of the concept, see Roberta L. Millstein, “Genetic Drift,” in *The Stanford Encyclopedia of Philosophy* (Spring 2021 Edition), ed. Edward N. Zalta, URL=<https://plato.stanford.edu/archives/spr2021/entries/genetic-drift/>

the writing of Ernst Mayr and Sewall Wright. Some of Gulick's insights were then later defended and reenergized by Stephen Jay Gould.³

More recently, Gulick's theoretical contributions have been revisited and reassessed, particularly in the context of debates about the sufficiency of pan-adaptationist accounts of organic evolution.⁴ Yet further lines of connection between Gulick and recent work in evolutionary theory can also be suggested. It is possible, for example, to discern close parallels between Gulick's emphasis on the self-developmental character of living forms, along with his account of the complex relations

³ Stephen J. Gould, "Unenchanted Evening," *Natural History* 100 (1991): 4–14; Vernon Lyman Kellogg, *Darwinism To-day* (New York: H. Holt and Company, 1907); Ernst Mayr, *Towards a New Philosophy of Biology: Observations of an Evolutionist* (Harvard, Mass.: Harvard University Press: 1988); Sewall Wright, "Fisher and Ford on the Sewall Wright Effect," *American Scientist* 39 (1951): 452–58. See also John Beatty, "What's in a Word? Coming to Terms in the Darwinian Revolution," *Journal of the History of Biology* 15 (1982): 215–39; and John E. Lesch, "The Role of Isolation in Evolution: George J. Romanes and John T. Gulick," *Isis* 66 (1975): 483–503.

⁴ Ron Amundson, "John T. Gulick and the Active Organism," in *Darwin's Laboratory: Evolutionary Theory and Natural History in the Pacific*, ed. Roy M. Macleod and Philip F. Rehbock (Honolulu: University of Hawaii Press, 1994), 110–39; Brian K. Hall, "'Evolutionist and Missionary,' The Reverend John Thomas Gulick (1832–1923). Part I: Cumulative Segregation—Geographical Isolation." *Journal of Experimental Zoology Part B: Molecular and Developmental Evolution* 306 (2006): 407–18; Hall "'Evolutionist and Missionary,' the Reverend John Thomas Gulick (1832–1923). Part II: Coincident or Ontogenetic Selection—the Baldwin Effect." *Journal of Experimental Zoology Part B: Molecular and Developmental Evolution* 306 (2006): 489–95; Rebecca J. Rundell, "Snails on an Evolutionary Tree: Gulick, Speciation, and Isolation," *American Malacological Bulletin* 29 (2011): 145–57.

between organisms and their environments and current debates about organismic agency and niche construction.⁵ Recent discussions of the reciprocal relations between evolving organisms and changing environments—whether conceptualized or not as a substantial ‘extension’ to evolutionary theory—was an aspect of evolution that Gulick emphasized and explored at great length.⁶

While Gulick’s scientific contributions have been acknowledged, his very evident religious commitments have, for the most part, been dismissed, ignored or downplayed. Gould, despite his growing appreciation of Gulick’s arguments about “internal factors” driving evolutionary change, worried that Gulick’s “religious motives” had unduly impinged on his science. Gould nevertheless drew comfort from the fact that Gulick had hit on something of lasting scientific significance even if it was for “wrong or illogical [religious] reasons.”⁷ Brian Hall, in a passing remark in his recent overview of Gulick’s theoretical contributions to understanding evolution, notes that Gulick’s account was “based on scientific reasoning and his mission on faith.”⁸ As a consequence, presumably, the latter can be safely ignored, and the former examined independently. Others have tended to downplay rather than

⁵ Kevin N. Laland, John Odling-Smee and Marcus W. Feldman, “Understanding Niche Construction as an Evolutionary Process,” in *Evolutionary Causation: Biological and Philosophical Reflections*, ed. Tobias Uller and Kevin N. Laland (Cambridge: Cambridge University Press, 2019), 126–52. Denis M. Walsh, *Organism, Agency and Evolution* (Cambridge: Cambridge University Press, 2015). For a sympathetic but critical assessment of the latter, see Andrew Buskell and Adrian Currie, “Force, Friction and Fractionation: Denis Walsh’s *Organism, Agency and Evolution*,” *Biology & Philosophy* 32 (2017): 1341–1353.

⁶ Andrew Buskell, “Reciprocal Causation and the Extended Evolutionary Synthesis,” *Biological Theory* 14 (2019): 267–79.

⁷ Gould, “Unenchanted Evening,” 7. My insertion.

⁸ Hall, “Gulick Part I,” 410.

dismiss or ignore Gulick's theological side. Ron Amundson, in an otherwise far reaching and perceptive interpretation of the full substance of Gulick's thought, tends to downgrade the possible influence of theological concerns on Gulick's evolutionary theorizing. Amundson makes more of Gulick's growing commitment to socialism and its consonance with a critique of pan-adaptationist accounts of evolution. When Gulick's theological musings are discussed Amundson casts them either as conventional harmonizing strategies to aid acceptance of evolution or as strongly "naturalistic" in form. Amundson notes in particular Gulick's ostensibly functionalist and evolutionary account of religion that appeared to side-line the truth content of religious claims.⁹ All of these treatments of the religious dimensions of Gulick's thought fail to grapple with what John Stenhouse has termed "missionary science," or the creative engagement with scientific investigation evident in the history of Christian missions.¹⁰ The existence of such missionary science tells against any hasty move to bracket the religious mission from the science and consider the latter an independent enterprise. Arguably, Gulick's intellectual labor offers a particularly compelling and rich example of the binding together of science and missionary Christianity into an interdependent system of thought.

The most detailed and sensitive exploration of Gulick's religious outlook is found in the account of his life narrated by his son, Addison. Although colored by Addison's rejection of his father's more definite theological convictions, the commentary remains pertinent. In his closing reflections Addison suggests that the answer to why Gulick was a scientist could be found, "at the point

⁹ Amundson, "Active Organism," 127.

¹⁰ John Stenhouse, "Christian Missionaries, Science, and the Complexity Thesis in the Nineteenth-Century World," in *Rethinking History, Science and Religion: An Exploration of Conflict and the Complexity Principle*, ed. Bernard Lightman (Pittsburgh: University of Pittsburgh Press, 2019), 65–82.

where his science and religion c[a]me into joint relation.”¹¹ It was the integration of Gulick’s “nature adoration,” his commitment to the “sacred value the human soul,” and his emphasis on “non-fatalistic self-determination” alongside the search for “biological laws” of development that lay behind his entire “evolutionary philosophy.”¹² These intuitions and convictions were bound together by Gulick’s theological outlook. As Addison expresses it, “One must ... trace the characteristic interaction of these elements with the definitely Christian theism in which he believed, making an integrated life attitude by which his every reaction towards problems of intellect and ideals, no less than the choices of practical activity, were given a co-ordinated significance.”¹³

In keeping with this judgment, the argument of this paper is that Gulick framed and motivated his contributions to evolutionary theory theologically, in ways that have been overlooked. More than this, however, it argues that underestimating the impact of theological reasoning has led to misunderstandings of Gulick’s contributions to evolutionary theorizing. Richard England’s concise overview of Gulick’s theological appraisal of evolution goes some way to confirm this claim, but more needs to be done to establish and evaluate the central role of theology in Gulick’s life and thought and the ways in which it shaped, and was shaped by, his contributions to evolutionary theory.¹⁴

¹¹ Addison Gulick, *Evolutionist and Missionary: John Thomas Gulick Portrayed Through Documents and Discussions* (Chicago: University of Chicago Press, 1932), 503.

¹² *Ibid.*, 504–06.

¹³ *Ibid.*, 506.

¹⁴ Richard England, “Interpreting Scripture, Assimilating Science: Four British and American Christian Evolutionists on the Relationship between Science, the Bible, and Doctrine,” in *Nature and Scripture in the Abrahamic Religions: 1700 to Present*, ed. Scott Mandelbrote and Jitse van der Meer (Leiden: Brill, 2008), 183–223.

Gulick was not, of course, alone in actively allowing his evolutionary theorizing to interact at depth with his metaphysical and theological convictions. In the late nineteenth century, it was increasingly unusual for explicit discussions of theology to appear in publications dedicated to reporting original scientific work. Detailed theological work was kept separate. But that division of epistemic labor did not mean that the influence of theological and metaphysical concerns on evolutionary theorizing ceased. On the contrary, theological views frequently surfaced, or operated at depth, in discussions about the mechanisms and wider meanings of evolution. Some, such as the English zoologist St George Mivart and the American botanist Asa Gray, made deliberate and sustained attempts to work evolution and theology into a unitary or harmonising scheme, even if they often accompanied their efforts with a disclaimer that their scientific investigations and interpretations were not pre-determined by theological postulates.¹⁵ As Martin Fichman has shown at length, the same was true of Alfred Russel Wallace. Wallace essentially ignored the privatization of theological (or non-theological) beliefs, and increasingly incorporated a form of theism into his accounts of the evolution of life.¹⁶ Even for those who were more cautious than Wallace about ‘doing [or denying] God’, theological and/or metaphysical principles continued to provide a set of mostly undeclared background

¹⁵ On Gray’s theology of evolution, see, for example, Bethany Sollereder, “The Darwin-Gray Exchange,” *Theology and Science*, 8(4) (2010): 417-432 and Errki V. R. Kojonen, “Evaluating the Darwinian Case Against Conjunctive Explanations,” in *Conjunctive Explanations in Science and Religion*, ed. Diarmid A. Finnegan, David H. Glass, Mikael Leidenhag and David N. Livingstone (London: Routledge, forthcoming). On Mivart, see, for example, Ernan McMullin, “Darwin and the Other Christian Tradition,” *Zygon*, 46(2) (2011): 291-316, and David O. Brown, “St George Jackson Mivart: Evo-devo, Thomism and Conjunctive Explanation,” *Theology and Science* (forthcoming).

¹⁶ Martin Fichman, *An Elusive Victorian: The Evolution of Alfred Russel Wallace* (Chicago: University of Chicago Press, 2010).

assumptions. This reality ran parallel to sustained engagement with evolutionary ideas in more consciously theological discussions.¹⁷ Such significant exchanges between theology, metaphysics and evolutionary theory did not cease at the beginning of the twentieth century. In the first few decades of the new century, the prolific development of evolutionary theory was accompanied by sustained theological and metaphysical engagements with the science of evolution.¹⁸ Gulick's life straddled these periods and points to the importance of unearthing the metaphysical convictions (whether framed theologically or not) that shaped the thinking of leading evolutionists.

Gulick, then, provides a leading, and particularly interesting, example of a significant evolutionary theorist whose thought unfolded in close dialogue with theological considerations. The goal is neither to deconstruct nor to defend Gulick's scientific contributions and theological reflections. Rather, it is to demonstrate how one scientific thinker creatively worked with theological ideas to produce a lasting, if inevitably contested, contribution to understanding evolution. The analysis is based on the general assumption that evolutionary theorizing has involved more metaphysical commitments (whether theological, non-theological or anti-theological) than is usually admitted. More boldly put, the

¹⁷ The literature on theological engagement with evolution in this period is large. For example, Mariano Artigas, Rafael A. Martínez, Thomas F. Glick, and Rafael A. Martínez. *Negotiating Darwin: the Vatican Confronts Evolution, 1877–1902*. (Baltimore: Johns Hopkins University Press, 2006); David N. Livingstone, *Dealing with Darwin: Place, Politics and Rhetoric in Religious Engagements with Evolution* (Baltimore: Johns Hopkins University Press, 2014); James R. Moore, *The Post-Darwinian Controversies* (Cambridge: Cambridge University Press, 1979); Jon H. Roberts, *Darwinism and the Divine in America: Protestant Intellectuals and Organic Evolution, 1859-1900* (Madison, WI: University of Wisconsin Press, 1988).

¹⁸ See, for example, Peter J. Bowler, *Reconciling Science and Religion: The Debate in Early-Twentieth-Century Britain* (Chicago: University of Chicago Press, 2001).

idea of evolutionary theory free from often tacit metaphysical assumptions can be regarded as questionable at best and incoherent at worst. This view has been trenchantly articulated by, for example, Michael Hanby and for explicitly theological reasons.¹⁹ The same general principle, that metaphysics is inescapable, has also been defended by John Dupré in his account of a naturalistic “process metaphysics.” As Dupré argues, biologists (and other scientists), “are almost inevitably committed to metaphysical opinions, and ... these make a difference to their work.”²⁰ Certainly, the argument that metaphysics matters can be made purely on historical grounds. A significant number of evolutionary theorists active in the first half of the twentieth century had strongly held views about ultimate reality that shaped how they developed and articulated their scientific ideas.²¹ Of course, the influence of metaphysics need not be considered, as it so often is, an *impediment* to a better account of how organic evolution occurs. In Gulick’s case at least, theological convictions often acted as a spur to

¹⁹ Michael Hanby, *No God, No Science? Theology, Cosmology, Biology* (Chichester: Wiley-Blackwell, 2013).

²⁰ John Dupré, “The metaphysics of evolution,” *Interface Focus*, 7(5) (2017), 20160148, on 1.

²¹ See, for example, Richard Delisle, “The uncertain foundation of neo-Darwinism: metaphysical and epistemological pluralism in the evolutionary synthesis,” *Studies in History and Philosophy of Biological and Biomedical Sciences*, 40 (2009), 119–32; Prominent early twentieth-century examples include Ronald Aylmer Fisher (see James Moore, “A faith fit for eugenics,” *Studies in the History and Philosophy of the Biological and Biomedical Sciences*, 38 (2007), 110–35) and Theodosius Dobzhansky (see, e.g., David Depew, “Adaptation as process: the future of Darwinism and the legacy of Theodosius Dobzhansky,” *Studies in History and Philosophy of Biological and Biomedical Sciences* 42 (2011), 89-98; and David O. Brown, “Theodosius Dobzhansky: Natural Selection, Paul Tillich, Russian Orthodoxy and Conjunctive Explanations,” unpublished essay).

creative and innovative theorizing, done in tandem with a dogged commitment to detailed empirical research and with an openness to revise or differently articulate the underlying metaphysics.

The interlacing of Gulick's theology and his theory of evolution is explored in three phases. First, the early development of Gulick's theological views and the ways those views interacted with his growing interest in evolutionary theory are examined. Second, it investigates the place of chance, law, agency and providence in Gulick's emerging theory of divergent evolution, arguing that Gulick has been misinterpreted as an early advocate of evolution as essentially random and without direction. Finally, it highlights the important role theology played in Gulick's mature thoughts about cultural evolution and Christian socialism.

[FIRST LEVEL HEADING] MEDIATING THEOLOGY AND THE NATURE OF EVOLUTION

John Thomas Gulick was born on March 13, 1832 at a mission station in Waimea on the island of Kauai, then part of the Kingdom of Hawaii. His parents were in the employ of the American Board of Commissioners for Foreign Missions (ABCFM). His father, a Presbyterian minister and graduate of Princeton Theological Seminary, was conservative in religion and was described by contemporaries as a "persistent Calvinist".²² Gulick's mother, converted at twenty seven during a sermon by the revivalist preacher Charles Finney, was also deeply devout. Notably, Gulick's parents named one of their sons after Finney. This affection for the famous evangelist suggests that strict Calvinism co-existed with a different theological tradition in the Gulick household. Finney's theology, with its emphasis on human free response to God's offer of salvation, sat uneasily with the old school Presbyterianism that Gulick's

²² Clifford Putney, *Missionaries in Hawaii: The Lives of Peter and Fanny Gulick, 1797-1887* (Amherst and Boston: University of Massachusetts Press, 2010), 17.

father had imbibed at Princeton.²³ Whatever the theological mix, the over-riding commitment of the Gulick household was dedication to the Christian missionary cause. Gulick was one of eight children, all but one of whom went on to serve as missionaries under the auspices of the ABCFM.²⁴

Gulick was educated at Punaho Academy in Honolulu, though his school days were curtailed because of health problems. From an early age he was entranced by the geology and natural history of Hawaiian Islands and began collecting the shells of land snails at the age of thirteen (a common pursuit on the Islands). After a stint in Oregon and California from 1848 to 1850 designed to improve his health and his bank balance (Gulick took part in the California gold rush), Gulick returned to Hawaii. From that time, thanks to the return of his older brother Halsey from the United States, he had greater access to books on natural history and theology. Halsey's personal influence on Gulick was significant and the brothers were close.²⁵ In July 1852, Gulick travelled with Halsey and his wife to Micronesia to set up a new mission. While there, Gulick and Halsey surveyed the islands' archaeological remains, ethnology and natural history and planned to use some of their collections to create a museum of ethnology and natural history.²⁶ There is no record of their conversations, but it seems highly likely that leading scientific developments and the theological bearings of scientific study were intensively discussed.

Halsey's own pilgrimage from his conservative upbringing forged a path that Gulick later followed. As a twelve-year-old, Halsey had been sent to New England, and it was there that he

²³ Charles E. Hambrick-Stowe, *Charles G. Finney and the Spirit of American Evangelicalism*. (Grand Rapids, Mich.: Eerdmans, 1996).

²⁴ Putney, *Missionaries in Hawaii*.

²⁵ See Frances Gulick Jewett, *Sidney Halsey Gulick: Missionary in Hawaii, Micronesia, Japan and China* (Boston: Congregational Sunday School and Publishing Society, 1895).

²⁶ Gulick, *Evolutionist and Missionary*, on 82–6, 119.

encountered at close quarters alternatives to the Old School Presbyterianism upheld, at least to some degree, by his father. Halsey lived for several years with his eponymous guardian, the theologian and New School Presbyterian Luther Halsey. The young Halsey's medical training at New York University, and his wide reading in theology and philosophy, further exposed him to ideas that altered his thinking. One key influence was a work by the English philosopher John Daniel Morell. In the early months of 1852, on his journey from Boston back to Hawaii via the Cape of Good Hope, Halsey read Morell's *Historical and Critical View of the Speculative Philosophy of Europe in the Nineteenth Century* (1846). In this work, Morell offered a detailed overview of the contemporary philosophical landscape represented by leading English, French and German thinkers. The long section dedicated to German idealism provided a way of thinking about God and creation that allowed for a strong providentialist understanding of continuous divine action alongside a form of naturalism that saw no threat to Christian convictions about creation from evolutionary theory. Morell's account of F. W. J. Schelling, for example, introduced a philosophy of nature that stressed the self-development of life and understood creation as an emanation of the eternal mind of God.²⁷ While Morell found Schelling wanting in several respects, his detailed exposition opened up a new way of thinking about the relationship between God and nature. Morell also discussed the theory of evolution found in the anonymous *Vestiges of the Natural History in Creation* (1844). *Vestiges'* epic portrayal of the evolution of the cosmos and of life did not concern Morell but he objected to its Deistic conception of God. Against such Deism, Morell argued that should evolution turn out to be true, it would "only make us more than ever cognizant of the workings of the Divine hand around us."²⁸ This move offered a way to reconcile evolutionary accounts with providentialism. Though there is no direct evidence that

²⁷ John Daniel Morell, *An Historical and Critical View of the Speculative Philosophy of Europe in the Nineteenth Century*. 2 vols. (London: William Pickering, 1846), 109–10.

²⁸ *Ibid.*, 452.

Halsey shared what he had read with his younger brother, it is hard to imagine that the topic went undiscussed during their natural and archaeological fieldwork in Micronesia just a few months later. In any case, as we will see, the younger Gulick later adopted an account that bore a striking resemblance to the one that Halsey had been exposed to at this time.

On return from Micronesia, Gulick, in part inspired by his older brother, began a more serious study of the land and tree snails of Oahu, the Hawaiian island on which he was living. Charles Darwin's *Journal of the Voyage of the Beagle*, which Gulick read early in 1853, further impressed on Gulick the need for a systematic account of the island's snails. With the help of local collectors and with instruction and advice from the conchologist Dr Wesley Newcomb, then resident on the island, Gulick amassed and catalogued a large collection of land snails.²⁹ By April 1853, with the help of Newcomb, he had accumulated a representative collection, presenting some of the results of that research to the Punahou Debating Society. Further collecting followed until November, when Gulick embarked for California and on to New York to continue his education there. Gulick's collection of Hawaiian land snails became the main empirical base of Gulick's later theoretical reflections, but even at the time of collection he was already aware of arguments for evolution. His own reading added to any conversations he had with his brother. In 1853, for example, he read *Footprints of the Creator*, Hugh Miller's popular refutation of the evolutionary text *On the Vestiges of the Natural History of Creation*.³⁰ Though it is not known what Gulick made of Miller's critique, his brother Halsey expressed serious reservations.

²⁹ See Rundell, "Snails on an evolutionary tree," for a discussion of the taxonomic complexities surrounding Gulick's work on land snails.

³⁰ Gulick, *Evolutionist and Missionary*, 110. On Hugh Miller's response to *Vestiges*, see James A. Secord, *Victorian Sensation: The Extraordinary Publication, Reception and Secret Authorship of Vestiges of the Natural History of Creation* (Chicago: University of Chicago Press, 2000), 280–84.

When Gulick arrived in New York in February 1854, he participated in several scientific associations including the New York Geographical Society, Ethnological Society and Lyceum of Natural History. The Lyceum gave Gulick opportunities to present and publish his work on land snails. By January 1855 he had enrolled in New York University and then became a student the following September at Williams College, Massachusetts. The four years at Williams College were formative for Gulick in several respects. In particular, his participation in the College's Lyceum of Natural History and his ongoing involvement in the New York Lyceum allowed him to develop his scientific skills and interests.

Big intellectual questions also beckoned. A letter sent to Gulick by Halsey during his first year gives arresting evidence of Gulick's receptivity to new scientific and theological ideas and possibilities. The letter was largely concerned with appraisals of recent theories of evolution by the journalist and geologist Hugh Miller (whom Gulick, as noted, had read) and James McCosh, then Professor of Logic and Metaphysics at Queen's College Belfast. In his letter to Gulick, Halsey strongly criticized both authors on the grounds that science had not yet "in its babyhood, learned how the properties of matter are so adjusted as to produce life." Halsey argued that the quick recourse to "the fiat of the creator" was a mistake.³¹ He also regarded this easy explanation for the origin of life as putting an "extinguisher on our young science [forcing] it to wish a divorce from religion."³² Halsey's view was striking because it suggested a preference for a naturalistic explanation for life's beginning, a position rare even among those who, in decades that followed, found ways to accommodate the evolution (rather than origin) of life within a Christian frame. Whether or not Gulick adopted his brother's view of life's

³¹ Jewett, *Sidney Halsey Gulick*, 157. Halsey was quoting directly from James McCosh, *The Method of Divine Government* (New York: Robert Carter and Brothers, 1851), 165.

³² *Ibid.*, 157.

origins, the letter from Halsey makes clear the sort of questions he was exploring and the intellectual possibilities that were open to him.

In September 1859, with his College education complete, Gulick enrolled at Union Theological Seminary, having decided against further study in Germany (partly for want of funds and partly because of his father's resistance). Though not able to gain first-hand exposure to a German theological education, at Seminary he encountered more fully the influence of German idealism in theological mode. Union's staff taught an imported version of the mediating theology that several German theologians had been developing over the previous decades.³³ Henry Boynton Smith, then Chair of Systematic Theology at the Seminary, was the leading voice in North America of that theological vision.³⁴ His celebrated work, *History of the Church of Christ in Chronological Tables* (1859), was published while Gulick was a Seminary student. Smith had secured a reputation as a leading light among the moderate Presbyterianism that the Seminary was often associated with. His historical and theological training in Germany had inspired a mediating approach to church history, combining as it did a scientific and confessional sensibility. Smith's understanding of church history was also strongly developmental and emphasized the fundamentally organic character of the history of doctrine and ecclesial life.³⁵ As Elizabeth Clark describes it, Smith, following his German teachers, conceived of

³³ Robert T. Handy, *A History of Union Theological Seminary in New York* (New York: Columbia University Press, 1987); Joshua Bennett, "August Neander and the Religion of History in the Nineteenth-Century 'Priesthood of Letters'," *Historical Journal* 63 (2020): 633–59.

³⁴ George Marsden, *The Evangelical Mind and the New School Presbyterian Experience: A Case Study of Thought and Theology in Nineteenth Century America* (Eugene: Wipf & Stock, 2003).

³⁵ Annette G. Aubert, "Henry Boynton Smith and Church History in Nineteenth-Century America," *Church History* 85 (2016): 302–27.

church history as “a natural developing organism that is impelled by its own inward structure.”³⁶ This, however, was regarded by Smith as entirely consistent with a providential understanding of the progressive development and overarching unity of the historical development of Christianity. Smith confessed that God was at work in and through history in all its manifest complexity and diversity, a confession that found material expression in his massively detailed chronological tables. This emphasis on progress, self-development and providence, was later echoed in Gulick’s understanding of natural rather than church history. Methodologically, too, it is possible to see parallels between Smith’s forensic attention to fine distinctions and Gulick’s elaborate classifications of different forms of segregation or isolation within communities of organisms.³⁷ But more than this, Smith’s emphasis on the interaction between exterior (social, cultural and economic) and interior (ecclesial) factors bears a striking resemblance to Gulick’s concern with analogous relations between what he later termed heteronomic and autonomic factors in organic evolution.³⁸ More generally, Gulick, like his brother, imbibed aspects of the German *Vermittlungstheologie*, including its idealism, and a concern with reconciling a scientific approach to scripture, history and nature with a thorough-going providentialism, or God’s hidden but active presence in the world.

³⁶ Elizabeth A. Clark, *Founding the Fathers: Early Church History and Protestant Professors in Nineteenth-Century America* (Philadelphia: University of Pennsylvania, 2011), 143.

³⁷ It is tempting to go further here and point out that segregation and ‘divergent evolution’ among Presbyterians had been commonplace since its emergence in the sixteenth century, a fact Gulick would have been well aware of. It was also a trend that his teacher, Henry Boynton Smith, worked hard to reverse.

³⁸ John Thomas Gulick, *Evolution, Racial and Habitudinal* (Washington D.C.: The Carnegie Institution of Washington, 1905).

It is not possible to reconstruct in detail Gulick's developing scientific and theological views, but the fragments available to us suggest that his career as a student in New York, and his discussions with his brother, put in place some of the leading ideas and stances—metaphysical and empirical—that shaped his later reflections on evolution and its relationship to human society and divinity. In light of his formative influences, it is not surprising that when Gulick first read *On the Origin of Species*—according to his son late in 1859 just weeks after it had been published—his mind, was “ripe for Darwin's illuminating interpretation of nature.”³⁹ He was ready to accept the role of “spontaneous variation and exposure to new environments.”⁴⁰ But he was also primed to resist explaining evolutionary change solely in terms of chance variation and natural selection. The differences between land snails found in the succession of valleys along an elongate ridge on the Hawaiian island of Oahu, with divergence increasing with distance, suggested a pattern of evolution that Gulick believed could not be explained by Darwin's central evolutionary mechanism. To correct what he saw as a mistaken mono-causal explanation of evolution, Gulick added to natural selection various internal factors including the self-directed behavior and development of organisms, diverse types of segregation within a breeding population, and other non-environmental forces to explain the diversification of life.

In his initial ruminations on Darwin's theory, noted on board a ship bound for Panama from New York in July 1861, Gulick observed that “the law of natural selection can be applied only where some degree of the quality has already been supplied.” Birds, he surmised, had none of the “spark of the higher reason” from which a rational animal might evolve.⁴¹ Humans would never develop the power of flight for the same structural reason: there was no incipient tendency towards flying. This conviction stayed with Gulick and, in his mature thinking, found expression in his signature argument

³⁹ Gulick made this comment in 1912, as cited in Gulick, *Evolutionist and Missionary*, 163.

⁴⁰ Gulick, *Evolutionist and Missionary*, 163.

⁴¹ *Ibid.*, 170.

that natural selection depended upon the “general power possessed by every organism” to discriminate between harmful and helpful actions and to anticipate future needs.⁴² This was true of all forms of life, from single-celled organisms to *Homo sapiens*, though the latter represented this power in its fullest extent and highest expression. How these thoughts—first formulated during and shortly after his Seminary training—matured with time, now requires fuller exploration.

[FIRST LEVEL HEADING] CONTINGENCY, DIVERGENT EVOLUTION AND PROVIDENCE

Gulick has regularly been staged as an early advocate of evolution as directionless and radically contingent. Ernst Mayr for example, hailed Gulick as “the first author to develop a theory of evolution based on random variation.”⁴³ This view perhaps derived from Gulick’s argument, making up one component of his intricate evolutionary scheme, that indiscriminate separation of organisms into groups altered patterns of variation and led to diverse evolutionary trajectories.⁴⁴ Other leading twentieth-century evolutionists built on this. Stephen Jay Gould’s praise for Gulick’s discussions of contingency and ‘freedom’ chimed with Gould’s skepticism about the predictability of the evolution of life on earth. As is well known, Gould espoused the evolutionary contingency thesis against the view that evolution followed predictable paths towards likely (or even inevitable) outcomes.⁴⁵ The paleontologist Simon Conway Morris, has been among a number of evolutionary biologists who have countered Gould’s view by emphasizing the abundance of instances of convergent evolution, taken as

⁴² Gulick, *Evolution, Racial and Habitudinal*, 29.

⁴³ Ernst Mayr, *New Philosophy of Biology*, 139.

⁴⁴ Gulick, *Evolution, Racial and Habitudinal*.

⁴⁵ See John Beatty, “The Evolutionary Contingency Thesis,” in *Concepts, Theories, and Rationality in the Biological Sciences*, ed. Gereon Wolters and James G. Lennox. (Pittsburgh: University of Pittsburgh Press, 1995), 45–81.

evidence of ‘navigation’ towards similar ‘solutions’ from very different evolutionary starting points.⁴⁶ This debate continues unabated, even as its terms are refined, and its empirical referents shift and expand.⁴⁷ Early in this debate, Gould commandeered Gulick to support the importance of past and future contingents in the evolution of life. This, *prima facie*, was a reasonable move. After all, if convergence was as ubiquitous as some evolutionists argued, the snails in the valleys of Oahu, Hawaii should have evolved towards similar solutions to the problems posed by their identical environmental settings and exhibited a merging (or maintenance) of form and function. What Gulick found, and what Gould underlines, was exactly the opposite. Gulick’s geographically arranged collection of ground and tree snails demonstrated increasing divergence as he traversed one valley to the next across a repeating set. According to Gould, Gulick used the unpredictability of snail evolution to argue against environmental determinism and the rule of “fate” in “human progress” thus establishing the “contingency of history” and “human free will.”⁴⁸ To Gould, this was both scientifically true and philosophically significant. The fact that humans are highly unlikely products of undirected and contingent evolutionary forces was, to Gould “a source of both freedom and consequent moral responsibility.”⁴⁹ Gould thus made his own metaphysical argument that bears superficial resemblance

⁴⁶ Simon Conway Morris, *Life’s Solution: Inevitable Humans in a Lonely Universe* (Cambridge: Cambridge University Press, 2003).

⁴⁷ See T. Y. W. Wong, “The Evolutionary Contingency Thesis and Evolutionary Idiosyncrasies.” *Biology & Philosophy* (2019) 34, article 22. <https://doi.org/10.1007/s10539-019-9684-0>.

⁴⁸ Gould, “Unenchanted Evening,” 6.

⁴⁹ Stephen Jay Gould, *Wonderful Life: The Burgess Shale and the Meaning of History* (New York: Norton, 1989), 291.

to Gulick's convictions about life's 'freedom' and the reality of moral choices but, as I will argue, entirely misses the wider sweep of the latter's theological metaphysics.⁵⁰

It must first be said, however, that Gulick did indeed use the natural 'facts' of snail evolution to counter what he regarded as a quasi-scientific fatalism that made the external environment the determining factor in the development of life. As a matter of chronology, Gulick published the results of his analysis of Hawaiian land snails before writing anything about evolutionary theory. His first scientific articles, which appeared in the *Annals of the New York Lyceum of Natural History* in 1856 and 1858, were largely concerned with taxonomy. As Gulick developed his thoughts on evolution, whether of Hawaiian land snails or life in general, his arguments against fatalism leaned heavily on his scientific research for empirical support. Gulick's son Addison had a point, then, when he suggested that his father "derived his answer [to fatalism] not from theology or ethics but from his scientific interpretation of the spontaneous evolution of the Hawaiian snails."⁵¹ This, however, does not capture the whole picture of how Gulick conceived of the relationship between scientific investigations and theological commitments.

Gulick's most fundamental reasons and motives for opposing fatalism were at once theological and scientific. This, I contend, is the reason why Gulick's metaphysics of evolution fundamentally departs from Gould's argument that makes entirely unpredictable evolution a condition of human freedom. For Gulick, in stark contrast, the idea that evolution is independent of a plan of any kind

⁵⁰ I owe this point to Ian Hesketh. For more on Gould and on competing conceptions of contingency and convergence in evolution and the application of those concepts to the writing of counterfactual history, see Ian Hesketh, "Counterfactuals and History: Contingency and Convergence Histories of Science and Life," *Studies in the History and Philosophical of the Biological and Biomedical Sciences* 58 (2016): 41–48.

⁵¹ Gulick, *Evolutionist and Missionary*, 282.

smuggles fatalism in through the back door, giving only the appearance of freedom. Gulick instead regarded freedom as working with, rather than independently of, overarching Divine purpose and presented active organisms as participants in the providential unfolding of life's history.

It was while on furlough in England during the summer of 1872, visiting his wife's family, that Gulick first publicized his views on evolution to a learned audience and presented his opposition to scientific fatalism. His initial effort came in the form of a letter published by *Nature* in July of that year. This introduced Gulick's basic thesis to a British scientific audience. In this short note, Gulick argued that the biogeography of the large number of species and varieties of snails on Oahu could not be explained by any difference in external conditions. More precisely, Gulick questioned whether natural selection, or the accumulation of variations better adapted to a particular environment, could account for the fact that "the degree of difference between several species of the same group is in proportion to their separation in space" and that each species or variety was restricted to a narrow territorial range.⁵² A paper delivered at the meeting of the British Association of Advancement of Science and, in fuller form, read to the Linnean Society of London in August and November respectively made a similar argument at greater length. What was distinctive, however, was the space Gulick (1873) gave to exploring the importance of the "tendency to variation," along with "separation" or an intrinsic tendency for members of a breeding population to differentiate and divide into groups that increasingly bred exclusively with one another.⁵³ Here Gulick was reaching towards a law of life, or of divergent evolution.

⁵² John Thomas Gulick, "On the variation of species as related to their geographical distribution illustrated by the *Achatinellinae*," *Nature* 6 (1872): 222–24; on 223.

⁵³ John Thomas Gulick, "On diversity of evolution under one set of external conditions," *Journal of the Linnean Society: Zoology* 11 (1873): 496–505, on 499.

It was Gulick's central contention that divergence was a characteristic development in any population of organisms and that divisions within a community could appear even in the absence of physical barriers or other environmental pressures. Gulick insisted that the inherent and inherited tendency of snails to vary, and to separate into new distinct groups, provided the key to their evolution. Other factors further enhanced this internal dynamic, including a lack of initial competition and then subsequent in-group competition for nutrition. There was something more going on in snail evolution, in other words, than chance variation that gave organisms a slight advantage in a complex and changing environment. The evolution of land snails Gulick had mapped across space suggested the possibility of a more rapid diversification of forms of life than might be expected if extrinsic environmental factors were the main drivers of evolutionary change. In these early papers, Gulick did not deny that natural selection was important, but he stressed that it could lead either to species stability or the splitting of species into new forms depending on a range of factors, not least a stronger or weaker tendency to vary or to separate into groups that eventually ceased to inter-breed. Underlying these observations was a conviction that the pace and pattern of evolution he had observed in snails suggested something remarkable about life in general that lay outside the explanatory parameters of Darwin's theory of evolution. [Place figure 1 about here]

After these initial attempts to characterize the nature of evolution, Gulick fell silent on the subject until he lectured at the Dōshisha School in Kyoto, Japan in 1878 and 1879. Opened in 1875, the School was designed to deliver a Christian college education to Japanese students. This mission resonated strongly with Gulick who had settled into a role as a Christian educator since he had arrived in Japan in 1875 after more than a decade of missionary service in Mongolia. This return to Japan (he had been there in the early 1860s making his way by pioneering photography) allowed Gulick more time and opportunity to read, lecture and eventually write about evolution. His lectures at the Dōshisha

School made the case to students for evolution and its compatibility with Christianity.⁵⁴ Gulick, like several other American missionaries in Japan at the time, saw this case as essential to making Christianity credible in a culture, spurred by the modernization associated Meiji restoration, increasingly engaging with western science and philosophy. Gulick, though, was not just doing the work of an evolutionist and apologist. He was also crafting his own distinctive account of evolution. He did so in the light of other versions that he considered to be mistaken in scientific and metaphysical terms.

In an article that appeared in 1883 in the monthly magazine, *The Chrysanthemum*, a periodical published in Japan and largely concerned with missionary subjects, Gulick again argued that Darwin's theory of natural selection, whatever its obvious merits, left unexplained the nature of the organism on which it acted. Gulick's concern with this understanding of evolution was that it risked leading to a type of fatalism that made human actions in particular wholly subject to circumstance. Rather than appealing to the "rational nature" of humans as a capacity that enabled them to transcend the "mechanical laws" of nature, Gulick evoked "a truer science [that] finds in nature a very different law, a law of spontaneous variation and of discriminating endeavor, in accordance with which faculties are evolved, and external conditions subdued and appropriated for ever widening uses; in a word, a law of advancing conquest by which the Material is conformed to the Ideal". The "beginning" of this law was found not in humans but in "the humblest of organisms."⁵⁵ In his reading of this frequently cited passage, Amundson marks the terms 'ideal' and 'discriminating endeavor' as somewhat "pontifical"

⁵⁴ Gulick, *Evolutionist and Missionary*, 251.

⁵⁵ John Thomas Gulick, "Darwin's theory of evolution applied to Sandwich Island Mollusks," *Chrysanthemum* 3 (1883): 6–11.

(124) and imprecise.⁵⁶ This aspect of Gulick's argument, however, reappeared sometimes in the same and sometimes in cognate terms, as a central plank of his account of evolutionary change.

Gulick's next published account of the relations between evolution and theology appeared in the *Chinese Recorder* in 1885, a missionary periodical edited by his brother Halsey. His two-part article was based on a lecture given to the Kobe and Osaka Missionary Association in 1884. A year earlier, at a much larger international missionary conference organized in the same city, Gulick had expressed the need to counter what he and other missionaries at the time regarded as the threat of Western-style scientific materialism to the fledgling Christian faith of their Japanese students and converts.⁵⁷ Gulick's efforts, beginning with his lectures at Dōshisha, aimed to counter the kind of aggressively anti-Christian propagation of evolution by the American zoologist Edward S. Morse and a number of prominent Japanese intellectuals who followed Morse in using Darwinism as a weapon to discredit the intellectual and social credibility of Christianity.⁵⁸ *Contra* Amundson this, more obviously and immediately than Gulick's politically inspired resistance to Japanese social Darwinism, prompted Gulick's further reflections on the metaphysics and theology of evolutionary change. His primary

⁵⁶ Amundson, "Active Organism," 124.

⁵⁷ John Thomas Gulick, "Discussion." *Proceedings of the General Conference of the Protestant Missionaries of Japan*, ed. Publishing Committee (Yokohama: R. Meiklejohn and Co, 1883), on 129.

⁵⁸ On the reception of evolutionary theory in Japan in this period, see Helen Ballhatchet, "Religion of the West versus the science of the West: the evolution controversy in nineteenth-century Japan." In *Japan and Christianity: Impacts and Responses*, ed. John Breen and Mark Williams (London Macmillan, 1996), 107–21. G. Clinton Godart, *Darwin, Dharma, and the Divine: Evolutionary Theory and Religion in Modern Japan* (Honolulu: Hawaii University Press, 2017); Kuang Chi Hung, "Alien science, indigenous thought and foreign religions: reconsidering the reception of Darwinism in Japan," *Intellectual History Review* 19 (2009), 231–50.

audience was missionaries based in Japan, China and other parts of East Asia and the outlet was an influential English-language missionary periodical published in Shanghai.

The first part of Gulick's article, entitled "Evolution in the organic world," laid out in greater detail arguments he had been making for some time. His keynote was the importance of the action of organisms in shaping their own evolutionary pathways and in altering their relations with an external environment. After spelling out six converging lines of argument for the reality of evolution, or the similarities between species grouped within a given genus, order or class being consequent on sharing a common ancestor, Gulick turned to critique Charles Darwin's descriptions of evolutionary causes. Although Gulick recognized Darwin's emphasis on chance and individual variation, he suggested that the mainstay of Darwin's argument made conditions external to the organism the driving force of evolution. Variations may arise in ways unrelated to the immediate needs of an organism in a given environment, but, as Gulick read him, Darwin ultimately "looked upon external nature as the cause both of the initial tendency to vary and of the subsequent Natural Selection between the different varieties."⁵⁹ Gulick, however, objected to describing natural selection as a "power" independent from the individual species on which it acted. Instead, Gulick defined natural selection as the "direct result of Variation," making the organism its cause rather than its effect. Critiquing two of Darwin's key analogies for natural selection—the breeder and the architect—Gulick argued that nature does not furnish a "power standing outside of the organism." Instead, Gulick insisted that it was organisms that have the ability to "use the environment" in beneficial ways, that "power of use" being defined as "varied and discriminative action with reference to the maintenance of an ideal state, through the

⁵⁹ John Thomas Gulick, "Evolution in the organic world," *Chinese Recorder and Missionary Journal* 16 (1885): 241–50, on 247.

subordination of present means to future ends.”⁶⁰ It was Gulick’s conviction that without such power already in place, natural selection would not occur.

Adding to these claims, Gulick built on his suggestion that natural selection alone could not account for the emergence of different varieties and species from a single common ancestor. Instead it was “a law rising out of the very nature of organic activities—a law of Segregation, bringing together those similarly endowed, and separating them from those differently endowed.”⁶¹ It was this “law” that Gulick would elaborate in extraordinary detail over the next twenty years in the growing conviction that it provided the “underlying unity” behind all evolutionary processes.⁶² It was a law embodied in the actions—discriminate, habitual and anticipatory—of organisms, actions that Gulick believed were “directed towards the maintenance of that ideal state in the actor which we call life.”⁶³ These convictions made possible a vision of nature that made organisms, and life itself, the very basis of evolutionary change. As noted earlier, this emphasis on the spontaneous agency of organisms might seem to suggest that evolution was characterized by radical contingency. This was not, however, the conclusion Gulick himself drew and can only be sustained if his metaphysical convictions are kept out of view.

In a critical passage, Gulick presented organisms “send[ing] forth offspring endowed with various powers, as experiments in different directions, thus increasing the possibility that some will succeed.”⁶⁴ This was a picture of life’s evolution Gulick found congenial to a theological interpretation of nature. As he put it earlier in his article, there was nothing about evolution that removed “the

⁶⁰ Ibid., 250.

⁶¹ Ibid., 245.

⁶² Gulick, *Evolution, Racial and Habitudinal*, v.

⁶³ Gulick, “Evolution in the organic world,” 244.

⁶⁴ Ibid., 245.

mystery of creation.” His readers, he presumed, believed that “our individual lives are from God” even though no-one would deny that we are “born of parents according to the order of nature.”⁶⁵ Divine and natural explanations for organic evolution similarly could be conjoined rather than set in opposition. Gulick expressed this conviction in similar language in an un-dated poem, quite possibly written at around this time. There Gulick mused that: “The oceans and continents work for one end/ And open their realms as abodes for new life;/ While venturesome life, amidst turmoil and strife/ Sends forth its strange forms for each place to contend.” Although freighted with teleological language, this verse remained at the level of natural processes. The next stanza, however, shifted perspective: “The marvelous works of creation arise/ Till the myriad miracles blind our dim eyes./ And we see not the Infinite Spirit that moulds/ The wide universe, moving in wisdom and power,/ While guiding the planets, and shaping each flower;/ For goodness unchanging all nature enfolds.”⁶⁶ This was a poetic conception of continuous creation, of an immutable and beneficent Creator active in every level of nature from the entire cosmos to an individual flower. Life’s goal was to diversify and develop, all under the providential direction of an uncreated cause that did not cancel or compete with nature’s own agency.

In the second part of his article, published in a later issue of the *Chinese Recorder*, Gulick expanded on this theology of evolution. There, Gulick enumerated five aspects of the relationship between organic evolution and “leading doctrines of natural and revealed religion.” The first was a thought that his brother Halsey had encountered while reading J. D. Morrell in the early 1850s: the fact of evolution strengthened rather than undermined the traditional argument that found in nature

⁶⁵ Ibid., 242.

⁶⁶ Gulick, *Evolutionist and Missionary*, 134.

evidence of God's "being, power and wisdom."⁶⁷ The remaining points further developed this natural theology of evolution, particularly with respect to the consilience between evolution and human flourishing. Gulick argued that the evolutionary history of humans made no difference to their relationship with God and creation. This was based on his conviction that human "responsibility and freedom" was not threatened by evolution properly understood. Gulick had already noted that if Herbert Spencer and Darwin's accounts of evolution were correct then, "we must expunge[e] from our theology all such words as sin and righteousness."⁶⁸ In other words, Darwinism, read as a version of fatalism and as undermining human agency and culpability, was fundamentally opposed to Christianity in metaphysical terms. But Gulick did not believe Darwinism so conceived was true. Evolution, on the other hand, certainly was and provided further grounds for the conviction that the world was made for the highest good of humanity. Among other things, such a conviction echoed the use made of evolution to propose a new kind of scientific theodicy by other co-religionists such as Asa Gray. Suffering could be explained because it was necessary to allow evolution to take its course towards human flourishing, and all as an outworking of God's providential action. Unlike Gray, however, Gulick's theodicy was more explicitly developed against Darwin's own theory of evolution.

Gulick's view that evolution revealed "as never before, the fitness of the world ... as a school in the highest lessons of the spiritual life," had closer connections with the thought of other Christian evolutionists⁶⁹ His language about evolution's pathways to the good bore a striking resemblance to arguments made by the Scottish evangelist and evolutionist Henry Drummond in his best-selling book published two years previously, *Natural Law in the Spiritual World*. We know that Gulick read

⁶⁷ John Thomas Gulick, "The Theory of Evolution in Some of its Relations to Christian Theology," *Chinese Recorder and Missionary Journal* 16 (1885): 295–97, on 296.

⁶⁸ *Ibid.*, 295.

⁶⁹ *Ibid.*, 296.

Drummond's book for the second time in 1888 and it is likely that he had already encountered it by 1885.⁷⁰ Drummond's controversial argument—that there was a seamless continuity between organic and 'spiritual' laws, and that the former supplied direct analogues of the latter—was an idea Gulick was drawn to. His account of the relations between environment, law and the self-directed activities of organisms was, however, subtle and carefully articulated. In order to summarize his own position, Gulick worked off a verse from the New Testament epistle to the Philippians, suggesting that “everywhere we find creatures called upon to work out their own salvation; for it is God that worketh in them, that they may obtain complete fitness to the environment in which they have been placed.” Gulick expanded on this thought by arguing that:

The same power which has appointed that the meek shall inherit the earth, has in all ages been working among all grades of creatures, giving the inheritance to those best fitted to hold sway in the sphere in which they move, each creature being tested according to the laws that relate it to the environment in which it must move;—according to vital, or mental, or social, or spiritual laws, according as the nature of the being brings it into these relations.⁷¹

Whatever else this recondite statement meant, it did not make chance or accidental variation a major driver of evolutionary change. Laws “appointed” by God have a clear role in shaping the direction and character of evolutionary change (of whatever kind). To Gulick, of course, such laws cannot be reduced to a putative law of natural selection. In addition, organisms retain agency in their own evolution—they work out their “salvation,” or experiment with different modes of being even as the environments in which they live set conditions on what ‘success’ or ‘salvation’ might amount to.

Over the next twenty years Gulick found time to write much more extensively on evolutionary theory and turned on several occasions to consider some of the metaphysical questions connected to it.

⁷⁰ Gulick, *Evolutionist and Missionary*, 275.

⁷¹ Gulick, “The Theory of Evolution,” 296.

Two long articles appeared in the *Journal of the Linnean Society, Zoology* in 1888 and 1890 and laid out in detail Gulick's argument that segregation between members of a population was an essential condition for divergent evolution. Gulick took aim here at Darwin's own principle of divergence which was, for Gulick, wholly inadequate. Darwin, as Gulick read him, downplayed the importance of reproductive isolation and believed that the formation of two or more species from a common ancestor could be explained by natural selection operating on varieties within a population that could better exploit under-utilized resources in a highly diverse economy of nature.

Whether or not correct, Darwin's presentation of one of the central elements of his evolution theory, the principle of divergence, was and remains controversial.⁷² Gulick was aware of the challenges to it and was convinced that Darwin had not provided a good explanation for branching evolution. The tendencies of organisms to separate into groups—something that Gulick believed could happen in a raft of ways—meant that over time barriers, whether geographical, physiological, behavioral to name but a few, prevented inter-crossing. Differences could then accumulate through processes that drove “intensive segregation,” or the continually reinforcing of incipient differences through independent reproduction. Gulick was at pains to point out that geographical isolation—the appearance of a physical barrier such as a mountain range or deep ocean trench—was only one type of segregation. Darwin, Gulick believed, conflated isolation and segregation, missing the fact that the latter “is a process of much deeper significance.”⁷³ Polytypic or divergent evolution could occur, to use more recent terminology, in a sympatric as much as an allopatric mode. Gulick was convinced that

⁷² See, for example, Robert J. Richards, “Darwin's Principle of Divergence and Natural Selection: Why Fodor Was Almost Right,” *Studies in History and Philosophy of Science Part C: Studies in History and Philosophy of Biological and Biomedical Sciences* 43 (2012): 256–68.

⁷³ John Thomas Gulick, “Intensive Segregation, or Divergence Through Independent Transformation,” *Journal of the Linnean Society, Zoology* 23 (1890): 312–80, on 376.

permanent divergence happened in a population occupying the same geographical place and living under the same environmental conditions because of the tendency of species to spontaneously or ‘autonomically’ develop different forms of life which increasingly bred with one another rather than with members of the wider population. This was a vital law of evolution and made organisms themselves a fundamental driver of evolutionary change. It also demoted natural selection to an auxiliary, though still important, part of evolution and opened possibilities for changes in organisms that were non-adaptive. As Gulick put it, “natural selection is by no means the only principle on which the law [of intensive segregation] rests.”⁷⁴

All of this was a densely detailed working out of Gulick’s conviction—resting as it did on theological premises—that the evolution of life was not determined by natural forces or conditions external to a community of organisms. Instead, life in its growing diversity worked out its own evolution. This did not mean that this evolution was a random or directionless walk. In theological terms, it unfolded in concursive harmony with God’s ongoing action in nature. This conviction re-emerged, and undergirded, Gulick’s *magnum opus*, *Evolution, Racial and Habitudinal*, written over several years after his retirement from missionary work and published in 1905.

In a section in that book on Darwin’s account of the evolution of species, Gulick again made it clear that he did not think that chance variation and natural selection provided an explanation of divergent evolution. Darwin, in Gulick’s reading, attributed “the precise form of each species ... to the determining power of conditions outside of the organisms.”⁷⁵ This account of evolution was dramatically different from his own which identified the primary forces as “powers residing in the organism.” These “powers” operated according to “laws that allow of considerable diversity in their results.” Gulick gave the example of two horses that choose different routes down a mountain. Their

⁷⁴ Ibid., 378.

⁷⁵ Gulick, *Evolution, Racial and Habitudinal*, on 23.

choice of different paths was, “in a measure,” determined by the laws “found in the relation of the powers of the animals to the natural conditions of the different paths.”⁷⁶ The paths taken, however, could not be explained simply with reference to the environment in which they were created. This simple analogy emphasized Gulick’s central point: divergent evolution depended on forces internal to organisms and could not be reduced to variations that happened to confer a slight advantage or subtly improve an organism’s ‘fitness’ relative to a given environmental setting. One implication of this was to make causal powers in organisms the primary driver of evolution rather than what he characterized as the “minute and indefinite variation” of Darwin that varied in “every and any direction” and only contributed to speciation if it happened to provide some survival advantage.

Gulick’s rejection of Darwin’s account of divergent evolution was also evident in his attempt to demonstrate mathematically that if there was no tendency of “like” to breed with “like” in nature, then almost all diverging kinds would quickly die out.⁷⁷ Having taught himself the basic mathematics of probability by reading William Whitworth’s *Choice and Chance*, Gulick created what he called a “permutational triangle” to demonstrate that the chance breeding of pairs, without any bias towards the breeding of similar forms within a group of organisms, would reduce the amount of variation within that population.⁷⁸ Whether or not Gulick was correct either in mathematical or biological terms, his point was that breeding in nature did not occur simply by chance but was directed by reproduction between what he termed “compatible forms.” The breeding of like with like was to Gulick a “fundamental law of the organic world” and was an essential condition for life’s diversity.⁷⁹

⁷⁶ Ibid., 24.

⁷⁷ Ibid., 47.

⁷⁸ Ibid., 491–93.

⁷⁹ Ibid., 47.

The emphasis on internal powers did not mean that evolution was simply an outcome of a given organism's inner compulsions. The more an organism worked with rather than against the laws that governed the relations between living forms and their environment, the more it would survive and flourish. As Gulick framed them, these laws could be described as "fundamental" and "necessary," rather than contingent or epiphenomenal.⁸⁰ They were intrinsic to the relations between organism and environment and could not be separated from the enactment of those relations. For Gulick, the study of these laws of life and of evolution—or bionomics—was in the end a study of the creative actions of God and of nature in tandem. Importantly for Gulick, however, God's actions in the world of nature were not only seen in the law-like principles that shaped life's evolution. Writing to his son Addison in 1905, Gulick underlined again his long-held conviction that his "science, religion and philosophy" could be summed up in the words of Philippians 2: 12 (KJV), "work out your salvation with fear and trembling, because it is God who worketh in you both to will and to do." In the same revealing letter, Gulick suggested that the "All" (which is to say God) was not the sum total of nature's orderly operations, or its laws. God should also be understood as a personal agent and God's work was not only seen through a study of bionomics. The "personality of the universe," though beyond comprehension, could be known in part through reflecting on the spontaneous operations of the inner self.⁸¹ This route to knowledge of God via the human personality underlined the great mysteries of creation and divine providence. Even the spontaneous operations of human willing and knowing did not occur independently of God's providential activities. At the same time, as Gulick put it in the introduction to his book, the "methods of creation" were not entirely "inscrutable". Rather, in evolution the "energies of creation" had been "ever working in the ordinary [which is to say observable] processes of life."⁸²

⁸⁰ Ibid., 9.

⁸¹ Gulick, *Evolutionist and Missionary*, 330.

⁸² Gulick, *Evolution, Racial and Habitual*, 10.

All of this resonated with Gulick's larger conviction that life had evolved from a few living forms which, through segregation and experimentation, had diverged to inhabit and differentially utilize a vast array of environments. Gulick superimposed on this picture a stadial view, noting lower and higher stages of evolution. At each level, different laws pertained. At one (lower) level, organisms flourished at the expense of weaker varieties in the struggle for existence. At the highest, a different law governed what constituted success or fitness. The 'law' found in the gospels that the meek shall inherit the earth—though not discontinuous from the other laws of evolution—now regulated the future flourishing of *Homo sapiens*. Gulick again had expressed this in literary form in an undated poem describing the evolution of life from cosmic beginnings to its final end in the triumph of love. What Gulick describes as "striving, groaning nature" where "weak grow weaker, falling in the fight" is superseded in the human realm by a "commonwealth where none are held as prey." The "pulse of ... the broader plan" is felt in the "blessed hope" of the meek ruling the earth, of "wealth that comes from greed" giving way to a social equality in which "honest worth" is given its due. All this would be accomplished through the "conscious power in the common man" grasping the true end of creation, the triumph of love.⁸³ These sentiments were theologically grounded but had significant political ramifications. They pushed Gulick towards an increasing interest in Christian socialism, a subject he took up in print after the publication of his book on evolution. And they were based, more fundamentally, on his conviction that evolution, natural and cultural, progressed according to the distinct but inseparable actions of God and (human) nature.

[FIRST LEVEL HEADING] CHRIST, CULTURAL EVOLUTION AND SOCIALISM

Evolution, for Gulick, occurred in a way open to rational description and explanation. Like other natural processes, it exhibited order, lawfulness and an underlying unity. The laws of evolution were

⁸³ Gulick, *Evolutionist and Missionary*, 342–43.

also consistent with an ethical system central to human civilization and progress and pointed to the “power, wisdom and love” on which all nature ultimately rested.⁸⁴ Christianity, more than other religions, provided the inspiration for a progressive social evolution, the end of which was the full application of the principle of “regard for the good of all” across all of society and to all forms of social organization. Above all, for Gulick, it was the “direct effects of the character of Christ” that acted as the engine of progressive evolution. The missionary propagation of the truth of Christ was a form of “rational evolution,” which, unlike evolutionary change among non-rational animals and plants, did not take place through the exclusion of inferior organisms, but brought different “types” together under the banner of the “Fatherhood of God” and the “brotherhood of mankind.” The guiding principle of this rational and social evolution was Christ’s promise that the meek would inherit the earth. To Gulick, Christianity alone could “take man as he is in any and every land and set him on a new course.”⁸⁵

Gulick had shared these thoughts in a letter sent to the biologist and evolutionist, George John Romanes in March 1891. The letter provided a synopsis not only of some of the principles that Gulick used to justify his continued vocation as a Christian missionary but also the theological basis of his later involvement with, and promotion of, Christian socialism. The import and wider intellectual frame of the convictions found in that letter can be better understood by probing one of the key sources that influenced those strongly held views. As Gulick notes in his correspondence with Romanes, his main thesis had been drawn from the Congregational theologian Andrew Martin Fairbairn. In his brief apologia, Gulick pointed to a collection of Fairbairn’s sermons that had been published over a decade earlier under the title *The City of God*. He singled out one sermon which argued that nature was “rooted in reason” and that “rational man was the fruit of reason.”⁸⁶ These proposals resembled and echoed

⁸⁴ Ibid., 290.

⁸⁵ Ibid., 291.

⁸⁶ Ibid., 291.

Gulick's own convictions. Fairbairn's influence, however, ran deeper and the parallels between his thoughts and Gulick's help to further unlock a shared theology of nature and a shared emphasis on Christ as the key to the future evolution of humanity.

There were several reasons why Fairbairn's thought appealed to Gulick. One was the shared influence on both of German mediating theology. In the 1860s, Fairbairn had studied with some of the same German theologians that had influenced Gulick's seminary teacher, Henry Boynton Smith. Fairbairn had studied under Isaak A. Dorner, a German Lutheran theologian often cast as a leading figure in the mediating theology movement.⁸⁷ Dorner's efforts to work between the dogmas of Lutheran theology and the philosophical ideas (and idealism) of his German contemporaries informed his overall theological project. Dorner engaged closely with the work of Georg W. F. Hegel and Friedrich W. J. Schelling and with modern developments in science and biblical criticism but in a critical fashion, guided by the internal logic of Christian faith. His project stressed, among other things, the centrality of Christ as mediator between God and humanity and as the ideal human. Dorner also understood God to be the "absolute personality" who, in his aseity or absolute independence, providentially guides creation to its ends without over-riding its free agency.⁸⁸ These proposals were re-worked by Fairbairn to formulate a theology that was Christocentric in character and open to philosophical and scientific developments. The latter were incorporated into an account of gradual progress towards a fuller understanding of Christ as the ideal human and accommodated by way of a theology of creation that emphasized the constant operations of God working in and through natural processes that were at once 'free' and in accord with reason and providence.

⁸⁷ Annette G. Aubert, *The German Roots of Nineteenth-Century American Theology* (Oxford: Oxford University Press, 2013).

⁸⁸ Jonathan Norgate, *Isaak A. Dorner: The Triune God and the Gospel of Salvation*. (London: Bloomsbury Publishing, 2011).

Like Dorner, Fairbairn responded positively to evolutionary ideas which he associated with notions of organic development and tied to a strong emphasis on the universal, unceasing and immanent divine action within the created order. The importance of continual divine activity in creation was a point Fairbairn made in the sermon, “Theism and Science,” that Gulick drew so much from in making his own case for the rationality of Christianity and of nature. Originally delivered at a meeting of the British Association for the Advancement of Science, Fairbairn began by declaring that “before, behind, beneath and beyond all is God, thinking the thoughts that create our world, willing the changes that measure our time and form our history, making our successive generations no aimless march from void to void, from birth to death, but an order constituted by intelligence, penetrated by purpose, and governed by righteousness.”⁸⁹ Fairbairn wished to question the idea of nature as in any absolute sense independent from God. It was this that led him to question the conventional distinction between the supernatural and natural. Without denying that God could exist without creation, nature, in Fairbairn’s estimation, was inexhaustibly infused with divine activity.

Joined to this emphasis on nature as the outworking of divine reason was Fairbairn’s conviction that the Universe was, in its essence, rational, a state confirmed by its intelligibility, or transparency to reasoned inquiry. What demonstrated this truth most was the “fruit” of evolution, the appearance of human mind. That development only occurred because “nature from the first had been the seed-plot of

⁸⁹ Andrew M. Fairbairn, *The City of God: A Series of Discussions in Religion* (London: Hodder and Stoughton, 1883), 35–6. It is worth setting this alongside Gould’s argument, above, that Gulick’s theory of evolution helped to confirm that natural history was an “aimless march.” For Fairbairn, and for Gulick, it was no such thing.

mind.”⁹⁰ Evolution, as a mode but not cause of creation, underlined God’s ever-working presence in creation and signaled its absolute rational foundation. For Fairbairn, as for Gulick, it followed that what nature might be in some of its stages did not fully reveal what it could and finally would be through God’s pervasive and perpetual activity. If the earlier history of evolution suggested that life evolved through violent competition, the emergence of human moral culture revealed an underlying ethical impulse that was not contrary to nature but consistent with it. Without acknowledging humans as “nature’s best interpretation” life might well be viewed as simply the “paradise of the strong,” ruled by a “pitiless ... God of war.” With humans in the frame—a product as they were of nature’s providential and progressive unfolding—such a conclusion could not be sustained. As Fairbairn expressed it in closing his sermon, “the theistic view of life is larger, more generous, has a soul of chivalry to the weak, a fit and beautiful place in its order for the gentle lives that enrich our universe with loveliness and love.”⁹¹ In light of these claims, it is not surprising that Gulick found Fairbairn to be both congenial and convincing. Gulick repeated much of Fairbairn’s sentiments, not least the conviction that human personality told us something significant about the nature of God. As the “All,” God was not “less than any fragment of the universe” including the “inner selves” of humans. The very existence of human self-consciousness, of human ethics, suggested to Gulick that God must be more than the “aggregate of physical laws.”⁹² Love, goodness, sympathy and ethical regard for the weak and the poor, were found in the divine as much as in human nature.

⁹⁰ Ibid., 69. This comes close, perhaps, to a form of theistic panpsychism. On this theological possibility, see Joanna Leidenhag, *Minding Creation: Theological Panpsychism and a Christian Doctrine of Creation* (London: Bloomsbury T&T Clark, 2021).

⁹¹ Ibid., 71–3.

⁹² Gulick, *Evolutionist and Missionary*, 330.

Fairbairn's views about the nature of God's action in the world also helps make sense of what others have seen as Gulick's naturalistic-sounding accounts of human mind and culture.⁹³ Like Fairbairn, Gulick felt that the natural/supernatural distinction was a product of culturally specific forms of language rather than a sure guide to reality. As he put it in another (unsent) response to Romanes, it was better to think that "all things that are, are in an important sense natural." This provided grounds for Gulick to agree with Romanes that even the "extraordinary historical phenomenon we have in Christ," was not "at variance with the general laws of evolution." The "philosophy of Christianity" had "a naturalistic basis." The natural emergence of Christianity could not, however, be fully explained with reference to evolutionary processes and laws operating at a lower level of nature. If Christ was in one sense a product of evolution, natural and cultural, he was also evolution's best interpreter and a guide for the future evolution of humanity. His life, character and teaching sat at "the center of evolution" and its unsurpassed influence was because he had "interpreted man's evolution in so wonderful a manner." Gulick skirted around the issue of the credibility of Christ's miracles, noting that he lived in a pre-scientific era and used pre-scientific concepts to account for what might now be understood in more naturalistic ways. It was Christ's "life and its influence on the world" as much as his death and resurrection (which Gulick did not deny) that made him unique and uniquely important.⁹⁴ Christ announced and enacted a new kind of cultural evolution that unfolded according to laws and processes distinct from other forms of evolutionary change, but nonetheless natural in character.

Gulick's interest in human evolution and the importance of Christianity in directing it towards higher ends, continued to develop and can be found scattered through several of his publications after the turn of the century. Although Gulick was clear in his introduction to his monograph on evolution, published in 1905, that he had concentrated on biological more than social evolution, the latter

⁹³ Amundson, "Active Organism"; England, "Interpreting scripture, assimilating science".

⁹⁴ Gulick, *Evolutionist and Missionary*, 292.

nevertheless received attention in several places. On several occasions, Gulick used examples from human populations to illustrate a particular type of segregation found in other species. More fundamentally, he discerned in human evolution the highest development of life's intrinsic capacity to accommodate to its environment, to anticipate future needs and to cooperate to overcome barriers and challenges. His book also hinted at Gulick's dalliance with eugenics, or what he termed "prudential selection," a form of "reflexive selection" only found among humans.⁹⁵ Gulick argued that there were both positive and negative kinds of prudential selection. The most civilized races faced degeneracy and even extinction because of a low birth rate. The solution was a form of positive eugenics—the encouragement of the most civilized races to have children. But Gulick also noted that another remedy for "degeneracy" was to employ "forms of institutional and prudential selection, enforced by public opinion and law, as will prevent the marriage of those who are specially liable to have defective offspring."⁹⁶ This represented for Gulick one clear example of the active organism, in this case humans, taking control of their own evolution and working towards a more ideal form of life. This did not appear to contradict in Gulick's mind his conviction that that ideal was governed and inspired by the hope that the meek, rather than the strong or fittest, would and should inherit the earth. How he reconciled (or not) his passing and apparently positive mention of eugenics and his wider Christian ethic of aiding the weak cannot now be recovered.

In addition to his brief allusions to eugenics, Gulick also argued that human populations were undergoing a dramatic and global "regressive segregation" or mixing of different racial groups. Speculating that this might eventually lead to one "generalized type", Gulick argued that it was driven

⁹⁵ Gulick, *Evolution, Racial and Habitudinal*, 111.

⁹⁶ *Ibid.*, 112. This statement was repeated in John Thomas Gulick, "False biology and fatalism," *The Friend* (1907) 65(8), 10–12, on 10–11.

by “social” rather than “racial” factors.⁹⁷ Races for Gulick were a product of many generations of segregation between different human groups, leading to both biological and cultural differences. They were not, however, fixed in either biological or, more especially, cultural terms. Given this plasticity, Gulick’s hope was that humanity’s “racial inheritance” would be increasingly shaped by the “ideals ... of social organization”, not least those derived from Christianity and the example of Christ, the highest human type.⁹⁸ Gulick, as we will see, developed this further and resisted forms of racial supremacy that marked the thought of some other contemporary champions of eugenics.⁹⁹

At around the same time that Gulick was writing his monograph, he was discussing the issue of race and evolution with his nephew, Sidney Gulick, then working on the final draft of his book on the evolution of the Japanese. Gulick’s theory of evolution strikingly influenced his nephew’s argument that the Japanese race, and the “oriental” races more generally—contrary to the views of some prominent ethnologists—were not radically different from “occidental” racial groups. Any differences beyond the merely anatomical were a product of cultural evolution and could change under the influence of novel ideas and social practices. There was nothing innately different about the Japanese race measured in psychical (intellectual, moral and emotional) terms. This reality gave grounds to be optimistic about the future. Like his uncle, Sidney Gulick believed that it was Christianity—or more specifically Christ—that could provide the Japanese with the principles and moral framework to continue to flourish and improve or progressively evolve. In his conclusions, Sidney echoed his uncle’s language and convictions about progressive cultural evolution by submitting that:

The destiny of a people, and the role it plays in history, are determined not by chance nor yet by environment, but in the last analysis by its own character. Yet this character is not something

⁹⁷ Gulick, *Evolution, Racial and Habitudinal*, 130.

⁹⁸ *Ibid.*, iv.

⁹⁹ See Diane Paul, “Eugenics and the left,” *Journal of the History of Ideas* 45 (1984): 567–90.

given it complete at the start, an intrinsic psychical inheritance, nor is it dependent for transmission on biological heredity Character belongs to the sphere of social psychic life [and is] transmitted through social intercourse This usually takes place through missionary activity.¹⁰⁰

Gulick shared these sentiments and remained committed to introducing Christianity to Japan (and China) to counteract what he regarded as the “fatalism” and anti-reform tendencies of Buddhism and other non-Christian religious systems.¹⁰¹ Teaching and embodying Christ’s life and teaching were the ways in which humans as active organisms could work out their salvation in the confidence that God was, simultaneously, working with them. Here Gulick’s science of evolution and his missionary convictions came into close cognitive contact.

Gulick increasingly believed that the only compelling political manifestation of this theology of evolution was socialism. This judgment, long in the making, was formalized when Gulick joined the Socialist Party of America in 1906.¹⁰² Gulick was convinced that socialism was in harmony with the laws of evolution and with the spirit of Christianity. As he put it in an unpublished defense, socialism would engender “the joy of working in accord with the laws of evolution that are carrying humanity forward; the joy of being in harmony with the cosmic forces:—In the language of religion, the joy of being workers together with God.”¹⁰³ This was classic Gulick, emphasizing as he did individual activity guided by ideals and laws that had their origins in the eternal personality of God. Gulick made no distinction here between superimposed morality, whether human or divine. Instead, the hidden depths

¹⁰⁰ Sidney Gulick, *Evolution of the Japanese: Social and Psychic* (New York: Fleming H. Revell Company, 1903), 445–46.

¹⁰¹ Gulick, *Evolutionist and Missionary*, on 377.

¹⁰² *Ibid.*, 334.

¹⁰³ *Ibid.*, 339.

of nature were moved by the same creative Spirit that led humanity towards the (socialist) Kingdom of God. This vision of things gave Gulick reasons to reject Thomas Henry Huxley's famous call to resist cosmic or natural forces at every turn to preserve a humane and ethical society. In his book on evolution Gulick argued instead that, "in the case of ethical man, I would not say, as Huxley does, that his life is in opposition to the cosmic process, but rather that he has attained to one of the higher stages of that process, in which the meek are the ones who inherit the earth."¹⁰⁴

Several short but impassioned statements, published and unpublished, written by Gulick in the years that followed the publication of his book underlined the fact that he was convinced the political corollary of this higher stage of evolution was international socialism. One of the more revealing of these did not appear in print but was found by his son among his father's files. In this brief comment, Gulick again laid out his three "universal laws of life," including "anticipatory action," "teleological action" and "co-operative action."¹⁰⁵ These interdependent laws played out differently depending on the organism and environment in question but were nevertheless operative across every form of life. In the human organism, Gulick traced cooperation from relations between the sexes to what he termed international industrial democracy. Gulick believed that the last form of cooperation, which aimed for economic equity, unity of purpose and a global commonwealth, was the only solution to the destructive competition of rampant and monopolistic capitalism. It was also the only answer to the world's "race" problem, a challenge Gulick believed would define the twentieth century.

In a piece published in the Hawaiian newspaper, *The Friend*, in March 1916, the eighty-four-year-old Gulick tackled the intertwined problems of international migration and "racial" competition. In Gulick's analysis, capitalism was fueling racial tension in its search for cheap labor and high profit margins. Several years previously Gulick had argued that capitalism, understood as a form of social

¹⁰⁴ Ibid., 157.

¹⁰⁵ Ibid., 336.

evolution, was leading to increasing partition between the “capitalist” and “laboring class.” What was required was a dismantling of the capitalist system and a search for forms of social organization that would reconstruct a “community of interest” and “conserve the interests of all.”¹⁰⁶ This same conviction ran through a subsequent article by Gulick on race relations. There he attacked American protectionism and anti-immigration policies, arguing that these strategies were shoring up an economic system that would lead to growing antagonism between east and west. Writing in a time of war, Gulick suggested that the “peace of the world” was at stake. Economic activity must be reorganized so that it would “supply the needs of the whole community” and reward labor equitably. With that radical reform, what Gulick termed the “brown,” “yellow” and “white” races could cooperate rather than compete and migrate across borders without the threat of conflicts over economic interests. Gulick admitted that one consequence of putting this internationalist and socialist vision into practice may be that smaller ethnic groups would be absorbed into larger populations. He nevertheless hoped that “race difference,” part of the “spice of life,” would not disappear.¹⁰⁷

Gulick’s idealist form of international socialism grew organically from his theology of evolution and his conviction that Christ represented the *telos* of progressive social evolution. Cultural environments and human societies shaped by the life and teaching of Christ would usher in an age of economic and racial equality without necessarily leading to the loss of ethnic or cultural diversity. Gulick, after all, had long been convinced that an organism occupying the same environment could diversify for reasons that were not necessarily utilitarian or driven by competition. As Gulick expressed it in an article setting out his critique of scientific fatalism “if even the snails are capable of dealing

¹⁰⁶ John Thomas Gulick, “The general laws of evolution as seen in social evolution,” *The International Socialist Review* (1907) 7: 489–91, on 490.

¹⁰⁷ John Thomas Gulick, “The distribution of migration,” *The Friend* 74(3) (1916): 56–7.

with the same environment in different ways, how much more may we expect of mankind?”¹⁰⁸ He was also convinced that what he dubbed life’s “power of action” increased through every stage of evolution until, through its capacity to discriminate, cooperate and anticipate the future, living organisms “[try] to prove all things, holding fast that which is good.”¹⁰⁹ This was not a vision of evolution channeled along set paths or with a single goal but one that “press[es] forward in its unbounded aspirations and ideals,” and “reaches out to include in its beneficence the living universe.”¹¹⁰ Life’s exuberant freedom to explore and creatively evolve did not, in Gulick’s theological imagination, exclude the unfolding of divine purpose but was instead an intense expression of it.

In this sense, Gulick’s theology and theory of evolution differed from, for example, Asa Gray’s concept of ‘directed variation’ or St George Mivart’s stress on internal physical forces that acted as constraints on evolutionary pathways. Gulick’s lifelong interest, ever since he collected snails as a boy, was on the remarkable diversity and ingenuity of living forms and, as his interest in evolution developed, on divergent rather than convergent evolution. Gulick did not champion orthogenesis. Instead, he made organisms the agents of their own evolution, and full participants in the ceaseless operations of divine providence.

[FIRST LEVEL HEADING] CONCLUSION

In a typically astute essay on the complexities involved in thinking about science, religion and their purported relations, John Hedley Brooke helpfully suggests three criteria that might be used to robustly corroborate claims about the influence of religious (or non-religious) beliefs on the cognitive content of

¹⁰⁸ Gulick, “False biology and fatalism,” 11.

¹⁰⁹ Gulick is quoting 1 Thessalonians 5:21.

¹¹⁰ Gulick, *Evolution, Racial and Habitual*, 158–9.

science.¹¹¹ One criterion concerns biographical evidence that a subject considers their religious convictions as both significant and relevant to their scientific work. Another asks about the success with which scientific and theological interests are integrated within a wider enterprise or overarching vision. And a third relates to what Brooke terms “conditional statements” in the form “if x then y” with x being a scientific development and y a presumed consequence for theology (or vice versa).

All of these apply in one way or another to Gulick. He was part of a missionary dynasty and had a particular predilection to connect his theological commitments to his scientific work for the sake of the missionary cause. His theological and his scientific convictions emerged through his own experience of a range of natural and cultural environments from the valleys of Oahu to his years of missionary service in China and Japan. His theology of nature was formed in both more definite and more diffuse intellectual environments that ranged from private conversation with his older brother through his college and seminary education and his wide reading in science and theology in learned journals, periodicals and books. His writings about evolution reveal an intricate interplay between theological and scientific categories and intellectual commitments that were tied to his own personal history. Although never systematically described by Gulick, there was a rich cross-fertilization between his field observations, scientific theory building and metaphysical and theological education and reflection.

His integrative vision of evolution and theology took shape over many years and was tied to the peripatetic, and also culturally immersive, nature of his vocation. This vision was summed up for Gulick in the paradoxical exhortation found in the letter to the Philippians urging the recipients to “work out their own salvation” because it was “God who was at work in them to will and to do”. In this account human and divine agency cooperate rather than compete, with one operating fully in time and the other

¹¹¹ John Hedley Brooke, “Religious belief and the content of the sciences,” 16 *Osiris* (2001): 3–28.

from eternity. It was a capacious vision that Gulick extended to all of life in ways that profoundly influenced his scientific theorizing. In developing this theological and scientific vision, Gulick went well beyond cursory or superficial attempts to reconcile evolutionary science with religious belief. He made a concerted effort to articulate, and work with, a theology of evolution that emerged from, and also informed, his theory of evolution. The emphasis on the agency of organisms, working in concert with God, as a leading factor in evolution had been inspired in part by idealist and providentialist ways of thinking adopted and adapted from the mediating theology that Gulick had imbibed during his theological training.

We can see, too, examples of Brooke's third mode of relating science and religion in the form of conditional statements. Gulick's stubborn opposition to fatalistic ways of thinking that robbed life of its freedom to work out its own measure of success (or, in theological terms, salvation) provides perhaps the most important. Gulick was convinced that *if* natural selection was the main driver of divergent evolution *then* snails and humans were automata, uninvolved in their own directionless evolution. In contrast, Gulick argued that natural selection did not provide an explanation of something fundamental to the evolution of life, namely the principle of divergence. Rather, the character and behavior of organisms were critical to the emergence of new species and the filling up of different environments with myriad forms of life. This, however, was no random walk but was ordered by divine love and wisdom working through the free agency of creatures and centered, ultimately, on Christ as evolution's 'best interpreter'. We might say in conclusion, then, that Gulick's biography, his wider theological vision and his resistance to fatalism all point to the ways in which his mediating theory and theology of evolution developed alongside a lifelong quest to understand both snails and salvation.

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