Plot Counter Plot: Genetics and Generic Strain in the Modernist Novel of Formation

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ABSTRACT
Historically, modernism coincides with the rise of modern genetics, which undermine and complicate but also enable positive new visions of the individual. Modern (Neo-Darwinian and Mendelian) genetics differ from earlier hereditary theories by positing a radical division between the operations of inheritance (at the molecular level) and the processes of individual development (at the somatic level). This basic division inheres in modernist *Bildungsromane* that engage thematically with reproduction and heredity; their dominant plot of individual development is therefore supplemented with a more or less antagonistic plot of genealogical continuity. In such *genic novels*, as I call this group of *Bildungsromane*, the two plots interact dialogically, producing formal disturbances to the linear, progressive plot of self-formation and enabling the possibility of real development for characters once barred from the ideals of *Bildung*. The essay links the modernist origins of the genic novel to its growing presence in contemporary literature.

KEYWORDS
Modernism, *Bildungsroman*, Development, Reproduction, genetics, August Weismann, Gregor Mendel

> As to heredity, it is a mystical expression for a fiction.
> —Wilhelm Johannsen, "The Genotype Conception of Heredity" (1911)

> This hereditary business is too awful.
> —E. M. Forster, *The Longest Journey* (1907)

Modernism is still associated largely with form. Yet its formal innovations coincide with content that was equally new and challenging. So how does "modernist content" relate to form and style? How do new forms enable new themes, heroisms, and conflicts? Locating the origins of high modernism in "the modernism of content" of Edwardian novelists, Jane Miller argues that their attempts "to write about women in new ways, and to challenge ideas about gender and marriage, … forced them to attend to and subsequently reshape narrative form" (7). One intriguing implication of this insight is Miller's suggestion that modernist content means unorthodox relations in courtship, sex, marriage, procreation, and inheritance—relations with formal linguistic and narrative correlates. When Virginia Woolf praises the (invented) novelist Mary Carmichael, it is for her novel's "tampering" with syntax and plot ("first she broke the sentence; now she has broken the sequence") and thus for its disjointing of the genealogical structures that dominate Western thought more generally (*Room* 88). Such disjunctions, argues Edward Said, are typical of twentieth-century fiction, which replaces "the set of relationships linked together by familiar analogy: father and son, the image, the process of genesis, a story" with "the brother, discontinuous concepts, paragenesis, construction. The first of this series is dynastic, bound to sources and origins, mimetic. The relationships holding in the second series are complementarity and adjacency" (66). By contrasting realist filiation realism and modernist affiliation, Said uncovers formal logic in modernist texts that may seem formless and reveals common ground between modernism and the critical strategies of feminist, postcolonial, and queer writing.

Starkly opposing filiation and affiliation, however, can obscure the fact that reproduction and genealogy remain important in modernist fiction. This tendency reflects a more general bias

towards the newness of modernism at the expense of its continuities with history, including literary history. Many critics thus approve Fielding's declaration in *A Passage to India*—"I'd far rather leave a thought behind me than a child" (130)—as if his admittedly ambiguous conciliation with Aziz later in the novel weren't predicated on the news of his unborn "son and heir" (303). Reproduction remains central in modernist fiction, which is not to say its meanings are constant. Sexual mores and education changed; censorship was relaxed or easier to circumvent; feminism challenged assumptions about gender; anthropology, sexology, and psychoanalysis moved sexuality, at least partly, from the moral and the absolute to the cultural, the relative, and the statistical. How modernism reflects and participates in these changes is well established. Less familiar are the ways in which modernism responds thematically and formally to a kindred change in perspective: the radical reformulations of heredity around the turn of the twentieth century.

This essay surveys modernist novels that engage more or less obviously with biological phenomena of reproduction and heredity, and explores how these engagements might produce modernist forms and critiques. I call such novels *genic*—pertaining specifically to genes—because their biological engagements and the resulting thematic and formal effects result from a distinctly modern *genetic* as opposed to broadly genealogical view of inheritance. This is not, of course, to privilege biology's influence on modernism, nor naively to isolate the science from its inevitable entwinement with culture and ideology. I focus on biology in order to redress its relative absence in modernist scholarship, which tends to emphasize if anything its sinister applications (eugenics, scientific racism).[1] Though crucial, such studies often overlook the richness and critical power that modernists might have recognized in the science itself.

In this essay I limit my corpus of genic novels to the *Bildungsroman*, a genre that includes many Victorian and modernist novels and thus provides a fairly well-defined standard against which to view historical shifts and tendencies. What's more, the *Bildungsroman* presents the nexus of form and content with special, perhaps even unique clarity: as Marc Redfield puts it, "the

'content' of the bildungsroman instantly becomes a question of form, precisely because the content is the forming-of-content, 'Bildung'" (42). Most importantly, the *Bildungsroman*'s primary concerns with individual self-formation put it at odds with the genealogical imperative. As Bradley Clissold argues, the "genre unwittingly locates itself amid emerging theories of hereditary transmission" and, as a result, "productive tensions" attend to the collision of "the future-oriented development of the protagonist … with the scientific view of the individual as a nexus of deterministic forces and a carrier of a composite past" (195, 197).[2] Agreeing with Clissold, I argue in this essay that the modernist *Bildungsroman* derives some of its key manoeuvres from the estranging insights of modern genetics, which radically reconfigures the conflict between *Bildung* and reproduction. In the frameworks that dominate turn-of-the-century theories of inheritance, individual growth and genetic transmission are effectively separate processes. Exploiting their separation, modernist fiction can explore the many ways in which the two processes intersect, diverge, or collide. Although the shattering effects of genetics on the self are perhaps more visible in fiction from the present age of cloning and bioengineering, when "selfish genes," "memes," and "going viral" are ubiquitous if often vague concepts, they emerged in modernist *Bildungsromane*. Aside from altering the individual's relation to genealogy, modern genetics enabled several even more radical separations, differentiating genetic identity from embodied existence, separating the possibility of genetic survival from the choices and orientations of individual sexual life, redefining even such a seemingly stable category as biological sex as a dynamic and changeable state. For modernist as for contemporary fiction, the implications for the self are both troubling and liberating, sometimes both at once.

GENEALOGY AND THE NOVEL OF DEVELOPMENT

Of the major novelistic genres, the *Bildungsroman* seems especially singular in plot structure and individualistic by virtue of its focus on a single character. Yet it has always been strained, more or less subtly, by dialogic tensions between individual and genealogical factors. On the one hand, as

Bakhtin argues in his essay on the *Bildungsroman*, "biographical life is impossible outside the larger epoch, which goes beyond the limits of a single life, whose duration is represented primarily by *generations*" (18); on the other hand, Moretti counters, the possibility of *Bildung* depends on the "dismantling [of] the continuity between the generations" (4). Among the societal and national duties of a citizen is the production of offspring (Krimmer 258), which is also, however, framed as the end of development. This quandary is especially stark for those whose right to citizenship is tenuous or denied. According to early theorists of *Bildung*, for example, women lacked the potential for a full cultural and thus political life because of their bodily investments in parenting (Konje 7). More generally, reproduction checks the progressiveness of *Bildung* because it is cyclical: all I learned my progeny must learn again from scratch. In any case, classical *Bildungsromane* tend to conceal this complication by making their protagonists parentless (Jane Eyre, Pip, Jude Fawley, Tom Sawyer), fatherless (Arthur Pendennis, David Copperfield), or symbolically orphaned (Wilhelm Meister, Fanny Price, Maisie Farange); the few who procreate tend to lose the child early (Frédéric Moreau, Tess Durbeyfield). As Mary Jean Corbett observes, "orphans and wards … have formal advantages, to be sure, for the favored plot of bildung" (88). In many cases, Victorian *Bildungsromane* find closure in the reconstitution of family, either by rediscovering parents (Oliver Twist), marrying (Jane Eyre), or both (Eppie Marner, Esther Summerson). The fact that the great nineteenth-century *Bildungsromane* conceal genealogical dynamics may explain why A. E. Zucker, when he describes the recent emergence of "the genealogical novel" in a 1928 essay, defines this "new genre" in contrast with "the biographical novel," which "deal[s] … with a single hero" (551). The genealogical novel, argues Zucker, arose as a distinct form "as a direct result of the widespread discussion of Evolution during the third quarter of the nineteenth century and the new interest aroused in the doctrine of heredity" (551). Its first specimens, according to Zucker, are Butler's *The Way of All Flesh* (1873–84, published 1903) and Zola's *Rougon-Macquart* series (1871–1893) and some of its contemporary versions

Mann's *Buddenbrooks* (1901), Galworthy's *Forsyte Saga* (1906–1921), and Rose Macauley's *Told by an Idiot* (1923).

But Zucker's contrast between genealogy and biography is problematic. It obscures the very feature that makes heredity a powerful new force in modern fiction. Zola's novels don't trade biography for genealogy; they embed biographies within a genealogical frame. *The Way of All Flesh* spans four generations of Pontifexes, but its focus is on Ernest Pontifex's education and struggles to escape his family. In some cases, such as Lawrence's *Sons and Lovers*, the plot of individual formation takes up so much narrative space that the genealogical plot is reduced to a framing device. This doesn't prevent genealogy from impinging strongly on its protagonists. Without the biographical plot, a genealogical sequence would strain the limits of narrative. Witness the following passage from Samuel Beckett's *Watt* (1953):

> the poor old lousy old earth, my earth and my father's and my mother's and my father's father's and my mother's mother's and my father's mother's and my mother's father's and my father's mother's father's and my mother's father's mother's and my father's mother's mother's and my mother's father's father's and my father's father's mother's and my mother's mother's father's and my father father's father's and my mother's mother's mother's and other people's fathers' and mothers' and fathers' mothers' and mothers' fathers' and fathers' mothers' fathers' and mothers' fathers' mothers' and fathers' mothers' mothers' and mothers' fathers' fathers' and fathers' fathers' mothers' and mothers' mothers' father's and fathers' fathers' fathers' and mothers' mothers' mothers'. (46–47)

Beckett embraces the anti-narrative outcome of dissociating genealogy from individual development (similar genealogical lists in the Bible avoid the Beckettian breakdown by serving as links between prophets and patriarchs). Zucker's claim for a new genre founded on "the doctrine of heredity" thus needs both reviving and revising. Instead of dividing "genealogical" and "biographical" novels, I argue that heredity has its most significant effects in biographical novels

that enable heredity to complicate the narrative of individual development. These novels are exploded *Bildungsromane*, their plot of individual formation frustrated by the distinctly modern conception of heredity as a molecular process separate from organismal development.

My depiction of the genic novel echoes Richard Dawkins' rather Bakhtinian claim that while reproductive cycles are "proceeding forwards in evolutionary time," the processes of individual growth "are proceeding sideways" (256). Our persons and our genes embody time differently: developmental and genealogical chronotopes occupy distinct temporal and spatial scales (personal and macroscopic versus evolutionary and microscopic), though they necessarily intersect.[3] The genic novel is therefore dialogic, in that it contains two incommensurable "generically typical plot-generating chronotopes" that give form to two overlapping but conflicting temporalities: "the time of human life, [and] of historical time" (Bakhtin, *Dialogic* 251, 250).[4] In a genic novel, then, the dialogic interaction of the two chronotopes prevents either genealogical or individual plot from reaching closure and, given the form-giving power of endings, rescues the narrative complexities of the whole narrative from being retroactively streamlined and ordered into coherence. Thus while Zucker's list of genealogical novels, including twentieth-century examples, tends aesthetically toward realism, the genic novel favours a modernist aesthetics of fragmentation, multiplicity, and indeterminism.

In its most basic form, the genic novel pits *Bildung* against reproduction itself. Few novels illustrate the conflict better than D. H. Lawrence's *The Rainbow* (1915). When Tom Brangwen adopts Anna early in the novel, she takes over as focal character; what had begun as a family novel seems to become a *Bildungsroman*.[5] But when she marries Will and becomes pregnant, the narrative shifts again: "With satisfaction she relinquished the adventure to the unknown. She was bearing her children" (238). This renunciation is only exacerbated by Ursula's birth: "her palpable and immediate future was the child. If her soul had found no utterance, her womb had" (249). If *Bildung* is a soul's unfolding, this alternative uterine "utterance" marks a shift in both characterization and genre: Anna is demoted from focal character to "a door and a threshold"

for "another soul … to stand upon" (238) while the plot reverts to the genealogical. Because Anna's "long trance of child-bearing had kept her young and undeveloped" (401–02), she is soon outpaced by Ursula. Most remarkable about Lawrence's equation of reproduction and underdevelopment is that it applies equally to men. Fatherhood makes Will "aware of … something unformed in his very being… which would never develop" (252). "Will" is now simply "the father," "Anna" just "the mother" (316); as parents "they [a]re neither of them quite personal, quite defined as individuals, so much [a]re they pervaded by the physical heat of breeding and rearing their young" (402).

No wonder the modernist heroine rebels. "[E]nraged" to see her mother "so utterly fulfilled in her breeding" (401), Ursula forms her self against the backdrop of a large family and rejects the very notion of procreation. When she discovers "a Rubens picture with storms of naked babies … called 'Fecundity,' she shuddered, and the word became abhorrent to her" (309). Ursula makes "Fecundity" the foil for her self-determination. The crisis of her narrative is therefore fittingly when she thinks she is pregnant by her lover Anton Skrebensky. The very thought triggers a conflict within her: "her flesh thrilled, but her soul was sick," an echo of the divergent "utterance[s]" of Anna's "womb" and "soul" (536, 249). Though Ursula briefly considers motherhood—asking herself "what did the self, the form of life, matter?"—she finally demurs because she sees "this child" as "the seal set on her own nullity" (536). Later, the announcement that "there would be no child: she was glad" (546) coincides with the rediscovery of Ursula's developmental potential: whereas Anna had "relinquished the adventure to the unknown" by fulfilling the procreative plot (238), Ursula is relieved and motivated to be venturing still towards "the unknown, unexplored, the undiscovered upon whose shore she had landed, alone" (546). *Bildung* shakes itself free by refusing what Paul Morrison calls "the master narrative of civilization itself," "the process by which children become parents who (re)produce children who becomes [sic] parents—the process, that is, by which the social order achieves stasis through the illusion of generational opposition and change—is nothing less than the

master narrative of civilization itself" (259). Breaking the cycle, Ursula generates enough developmental momentum to propel the four *Bildung* plots of *Women in Love* (1920).

For all its modernism of form and of content, *The Rainbow*'s genealogical conflicts involve relations between singular, coherent human characters—Anna and Will, Ursula and Anna, or Ursula and Anton. The peculiarities of the genic novel really emerge when the conflict includes the vexed coexistence of human characters and another kind of character: a genetically-determined trait or, by metonymy, the genetic material itself. It is the genic novel's special innovation to divert at least some of the *Bildungsroman*'s tensions away from the self's encounter with others in the outside world and towards the self's encounter with the particles known, since 1909, as genes.

MODERN GENETICS AND THE INDIVIDUAL

Heredity was challenging the ideals of *Bildung* even as it was being theorized by Herder, Goethe, Schiller, Humboldt, and others in the late eighteenth century (Lehleiter 11). *Bildung* implies autonomy and self-integrity, and thus, as Sherrin Berezowsky notes, "to acknowledge the role of heredity would be to undermine the didactic and hopeful qualities of biography" (826). That said, the troubling implications of heredity could be dismissed so long as inheritance was viewed as a kind of self-perpetuation, and until well into the nineteenth century biologists and laypeople alike viewed "heredity as the *identity* between parent and offspring" (Olby 62). In Shakespeare's procreation sonnets, fatherhood guarantees survival in "another self," in a "copy" (1845). Even the Lamarckian model of the inheritance of acquired characteristics,[6] which dominated the nineteenth century, blurs individual and lineage. Thus Samuel Butler, who equated heredity with memory, argues that "we can apprehend neither the beginning nor the end of our personality, which comes up out of infinity as an island out of the sea, so gently, that none can say when it is first visible on our mental horizon, and fades away in the case of those who leave offspring, so imperceptibly that none can say when it is out of sight" (104). Though more sophisticated than

previous models of reproduction as replication, Lamarckism also posits personal survival beyond bodily death and fosters the flattering notion of individual agency as the motor for creative evolution. It is a comforting idea that a record of my personality will survive in and indeed shape future generations, but the facts were clearly tipping the scale against Lamarckian inheritance by the late 1800s.

No such comfort is possible in the alternative model proposed by August Weismann in 1883. Strongly anti-Lamarckian, Weismann argued that "the inheritance of acquired characters has never been proved" and therefore repudiated the naïve view of "reproduction as 'an overgrowth of the individual,' and … heredity as a simple continuity of growth" (*Essays* 81, 72). Instead, he posited an impermeable boundary between the individual body (soma) and the genetic material (germ-plasm). While most theorists saw heredity as the flow of forces, essences, or memories (Olby 63), Weismann posited the transmission of physical particles that travel unchanged through a genealogical succession of mortal bodies.[7] Writing in 1911, Wilhelm Johannsen would note that "the view of inheritance as . . . the transmission of the parent's (or ancestor's) *personal qualities* to the progeny, is the most naïve and oldest conception of heredity." In this obsolete view, my parents are the *cause* of my traits. By contrast, "the modern view of heredity" attributes to the traits of the parents and the offspring to a common cause: "*the reactions of the gametes* joining to form a zygote" (Johanssen 130)—that is, the genetic material.

Lamarckism saw personal and genealogical existence as different aspects of the same continuous life. Weismann countered that reproduction is the mediating process between the fundamentally different organic processes of individuation and heredity. For unicellular lifeforms like bacteria, which have no body per se, reproduction is simple replication, mere copying that ensures a kind of immortality. Complex organisms, however, "have lost this power of unending life by being constructed of numerous cells, and by the consequent division of labour which became established between the various cells of the body" (Weismann, *Essays* 111). As a result, the task of reproductive replication has been delegated to one type of cell—the sex-cells or

"germ-plasm"—while the cells and tissues of the rest of the body—or soma—perform such tasks as nutrition, growth, locomotion, cognition, social interaction, swooning in love and making art. "Reproduction," writes Weismann,

> takes place by means of cell-division, but every cell does not possess the power of reproducing the whole organism. The cells of the organism are differentiated into two essentially different groups, the reproductive cells ova or spermatozoa, and the somatic cells, or cells of the body, in the narrower sense. The immortality of the unicellular organism has only passed over to the former; the others must die, and since the body of the individual is chiefly composed of them, it must die also. (*Essays* 111)[8]

In the illustration reproduced below, Geddes and Thomson offer a stark representation of Weismann's "conception of a continuous necklace-like chain of sex-cells … upon which the mortal individual organisms arise and drop away like so many separate and successive pendents [sic]" (239). The broken line at the top is the germ, travelling unmodified down the generations; the complex forms hanging off the germ-line are successive individual bodies, cellular outgrowths triggered by the meeting of the tadpole-like sperm and the large circular ovum.

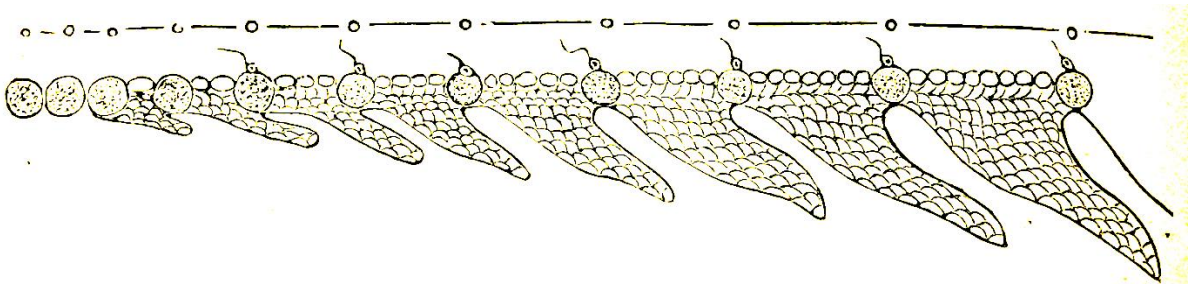

Figure 1: A schematic illustration of Weismann's division of germ (top) and soma (bottom). While successive bodies grow out of the fertilized eggs (larger circles), the germ continues unchanged from generation to generations. Reproduced from Geddes and Thomson (278).

An early literary reference to Weismannism crops up in Zola's *Docteur Pascal* (1893), whose titular character "had the intuition of the theory with which Weismann would later

triumph; he had come to the idea of an extremely fine and complex substance, the germ plasm, of which a part always remains in each new being in order to be transmitted, invariable and immutable, from generation to generation" (55). Italo Svevo suggests a Weismannian outlook in *Zeno's Conscience* (1923) when Zeno segregates a newborn's personal identity from its genetic legacy: "Poor baby!—you are the blood relation of people I know. The minutes you are now passing may actually be pure, but all the centuries that prepared for your coming were certainly not" (6). Though not "about" modern genetics, Svevo's and many other similar passages in modernist fiction seek to effect a separation between the genealogical part of the organism and the individual "you that had no hereditary destiny" (Sinclair 359).

The clearest literary articulation of Weismann's model is Thomas Hardy's poem "Heredity" (1917). Hardy adumbrates the estranging effect of the conflict between individual and genealogy:

> I am the family face;
> Flesh perishes, I live on,
> Projecting trait and trace
> Through time to times anon,
> And leaping from place to place
> Over oblivion. (1–6)

One voice tells two stories, one explicit and the other merely adumbrated. The latter concerns the familiar protagonists of most narratives: the mortal human characters whose lives fill merely "the span / of human durance" (9–10). The former concerns a supra-individual entity operating at microscopic spatial and evolutionary temporal scales. The poem thus beautifully reveals the double-plotting of the genic novel, especially the unsettling notion first posited by August Weismann in 1883, of genes moving from body to body "over [the individual's] oblivion." By giving the lyric "I" not to the human but to heredity, moreover, Hardy fully exploits the unsettling aspects of genetics. To "heredity," the individual is merely a stopover among many others, much as hotel rooms might be for a commercial traveller. This perspective, Dawkins observes, "sweep[s] the individual organism from its pedestal" (194).

Protagonists in nineteenth-century genealogical novels can fight heredity only by either recusing their selves from the genealogical line or by submerging their selves in it: Ernest Pontifex puts his children up for adoption to protect them from his hereditary habits, while Étienne Lantier in *Germinal* (1885) abandons his goals, education, and even personality by backsliding into hereditary alcoholism. By contrast, modernist characters seek to divide their individuality from the equally real forces of reproduction and inheritance, a model that approximates even when it doesn't follow directly from Weismannism. The result, from a narrative perspective, is complicated but not necessarily negative. Isolating the genetic from the somatic opens a space for individual self-determination beyond the inexorable conservatism of genetic repetition, even as it allows heredity to check the myths of untrammelled individualism. The incommensurability of the two plot levels, moreover, means that genic novels tend to be more or less blatantly incoherent in structure. In Gertrude Stein's *The Making of Americans* (1925), for example, the narrative is riven by the contrary impulses of linear self-directed growth on one hand and hereditary repetition on the other. "It is hard to live down the tempers we are born with," observes the narrator, setting up a Steinian paradox in which "each one is a separate one and yet always repeated" (3, 362). This is not the hell of living with family. It's the hell of "one" living with one's own "tempers," a part of the self that is also of other people—relatives and ancestors.

This hell is familiar to Stephen Dedalus, protagonist of James Joyce's *A Portrait of the Artist as a Young Man*. This novel, often treated as the *Bildungsroman*'s "twentieth-century apotheosis" (Berman 118), seems at first glance to treat heredity casually. Unlike *The Rainbow*, its narrative maps neatly onto Stephen's development: it spans the period from late infancy to early adulthood, showing nothing before his birth and allowing none of his own offspring to cut off his growth. Yet within this individual frame the novel occasionally allows the irruption of a genealogical remainder. As such, *A Portrait* is a formal, thematic, and characterological prequel to the "Oxen of the Sun" episode of *Ulysses*, which alludes explicitly to Weismannism: "modern

science has conclusively shown that only the plasmic substance can be said to be immortal" (399). This allusion is directly pertinent to Stephen's *Bildung*, the focus of *A Portrait*. So it is fitting that in *Ulysses* it is spoken by Lynch, Stephen's whetstone during the aesthetic discussion in *A Portrait*. When Stephen appropriates reproductive language for his disembodied aesthetic, Lynch is always on hand to remind him of the recalcitrance of desire, sex, and the body; Lynch's claim about "plasmic substance" in *Ulysses* is an extension of his sardonic and bawdy rejoinders to Stephen in *Portrait* and a reminder of genealogical dynamics that lurk, subtly but never invisibly, below the surface of the more obvious *Bildung* plot. This is not to say that Joyce favours reproductive Lynch over developmental Stephen, only that Lynch supplies a necessary dialogic counterpart to Stephen's perspective. The same function is performed by another future medical student, Temple, who enigmatically asks Stephen "Do you believe in the law of heredity?" (230). Temple follows his question by quoting "the most profound sentence ever written," whose source is "the end of the zoology. Reproduction is the beginning of death" (231). Faced with this "sentence" Stephen stays mum, a significant silence linked to his shock, three chapters and more than five years earlier, when he finds the word "Foetus" carved in a desk on which his father Simon once wrote the initials they share: S.D. (89). Given their association with "foetus," the initials are an unwelcome reminder that Stephen descends from someone, and therefore challenge his "proud sovereignty" (168), much as "fecundity" does for Ursula Brangwen. It is to obscure such challenges that Stephen diverts reproductive language and images into aesthetics, recasts his familial bonds as "the mystical kinship of fosterage," and casually dismisses his mother's burden of "nine or ten" children (98, 241). By having other characters speak for "the law of heredity," however, Joyce undercuts Stephen's sense of individual autonomy. This thematic irony has a structural counterpart: the genealogical plot may run mostly unseen below the surface of Stephen's developmental plot, yet it crops up often enough to reveal the reality of dynamics other than the linear progress in which Stephen is so invested.[9]

The "law of heredity" mentioned by Temple is Weismannism, as attested by the source for his quotation: Patrick Geddes and J. Arthur Thomson's *The Evolution of Sex* (1889).[10] Though the book questions Weismann's anti-Lamarckism (321–22), as a whole it amounts to a restatement of his thesis that the "division of labour" within multicellular organisms "has induced the antithesis of reproductive and somatic cells" (Weismann 146).[11] Where Weismann separates germ-plasm and soma, Geddes and Thomson divide all physiological processes into "the constructive and destructive (anabolism and katabolism) of living matter and protoplasm" (v) and argue that this division is the basis of sexual difference. Males, according to their thesis, are more catabolic, females more anabolic. Linking maleness to destructive physiology may seem to reverse traditional hierarchies, but it is a backhanded feminism at best. These are, after all, the same authors who cite the biological fact of sexual inequality to justify contemporary social structures: "What was decided among the prehistoric Protozoa cannot be annulled by Act of Parliament" (266). Their thesis amounts to the gendering of Weismann's unchanging germ as female and the developing soma as male. More anabolic, females have energy to spare for gestation and lactation, though the remainder is insufficient for full individuation; the more catabolic males can't afford to sacrifice much energy to reproduction and thus devote more to their development. Thus, write Geddes and Thomson, "the males, or . . . the more katabolic organisms, are more variable, and therefore . . . are very frequently the leaders in evolutionary progress, while the more anabolic females tend rather to preserve the constancy and integrity of the species; thus, in a word, the general heredity is perpetuated primarily by the female, while variations are introduced by the male" (270).

In *A Portrait*, Stephen's analogy of artistic creation and sexual reproduction suggests a defensive strategy for asserting his masculinity. If he expends his energy making art, he can evade charges of effeminacy—despite his feminine features (small feet and a "feminine mouth"; Joyce, *Stephen* 29) and his homosexual panic, so persuasively demonstrated by Joseph Valente. His misogyny often also takes the form of reducing women to reproductive functions; in *Stephen*

Hero, for example, he calls "the girls I see every day…. marsupials" (181). Joyce's allusions to Geddes and Thomson also occur in other (though, as it turns out, related) contexts, especially when Stephen thinks that "the waves of the rise and fall of empires do not travel with the rapidity of waves of light and it will be perhaps a considerable time before Ireland will be able to understand that the Papacy is no longer going through a period of anabolism" (*Stephen* 152). But this gendered division has its own pitfalls for Stephen as an Irish-Catholic colonial subject.[12] In a long line of scientific racists, Geddes and Thomson justify British paternalism by defining the Celtic race in anabolic (feminized) terms. They can thus explain the demographic paradox of the Irish, "in whom rapid multiplication occurs despite poor food," as a result of inactivity, "the habit of early marriage," and "some measure of lowered individuation" (27, 289).[13] In a double-bind typical of colonial or postcolonial *Bildungsromane*, Stephen is unable to assert his individual as a whole; like his adoption of the English language, his biological inheritance creates a conflict between his maleness and his ethnicity that cannot be resolved.

Temple's question—"do you believe in the law of heredity?" (Joyce, *Portrait* 230)—receives a more sustained response in May Sinclair's *Mary Olivier: A Life* (1919), whose protagonist obsesses about her family history of insanity after Mr. Sutcliffe asks her, "You believe in heredity?" (327). While Joyce limits heredity's haunting to occasional allusions and narrative gaps, Sinclair makes it one of two primary trials in Mary's development (the other is her manipulative mother). Spurred by Sutcliffe's question, Mary reads extensively on Victorian theories of heredity (Ribot, Haeckel), but it is a post-Weismannian understanding of heredity that enables her to conceptualize

> some part of you that was free. A you that had no hereditary destiny, that had got out of the net, or had never been caught in it.
>
> You could stand aside and look on at its happiness with horror, it didn't care. It was utterly indifferent to your praise or blame, and the praise or blame of other people; or to your happiness and theirs. It was open to you to own it as your self or to detach

> yourself from it in your horror. It was stronger and saner than you. If you chose to set up that awful conflict in your soul that was your own affair.
>
> Perhaps not your own. Supposing the conflict in you was the tug of the generations before you, trying to drag you back to them? Supposing the horror was *their* horror, their fear of defeat?
>
> She had left off being afraid of what might happen to her. It might never happen. And supposing it did, supposing it had to happen when you were forty-five, you had still thirteen years to write in.
>
> "It shan't happen. I won't let it. I won't let them beat me." (Sinclair 359)

The passage clearly articulates the conflict between "you" and "hereditary destiny," but it also models the conflict through its swings between second-, third-, and first-person narration, suggesting a fragmented, multiple Mary. The shift from "she" to "you" in a single sentence is particularly striking. I fail to detect a specific pattern in Sinclair's choice of either "you" or "she," though it seems not to be governed by Mary's attitude towards heredity; the simple fact that the alternations occur, however, is enough to posit a formal correlative to the novel's thematic exploration of female development against "the tug of the generations."

This conflict has immediate consequences for Mary's development and for the narration and structure of Sinclair's *Bildungsroman*. Mary struggles to write poetry and philosophy despite her fear of the hereditary madness she expects to begin when she turns 45:

> You had thought of yourself as a somewhat less powerful, but still independent and separate entity, a sacred, inviolable self, struggling against them for completer freedom and detachment. Crushed down, but always getting up and going on again; fighting a more and more successful battle for your own; beating them in the end. But it was not so. There were no independent, separate entities, no sacred, inviolable selves. They were one immense organism and you were part of it; you were nothing that they had not been

> before you. It was no good struggling. You were caught in the net; you couldn't get out. (333)

Sinclair embeds her protagonist's search for self-fulfillment into the more expansive plot of genetic continuation. Personal aspiration is consequently repeatedly frustrated by the idea if not the actual results of heredity: fearing the curse of hereditary madness, Mary puts off her poetic and philosophic work. As a result, the novel stretches long past the end of most *Bildungsromane*. Only in middle age and, significantly, after her mother's death, does she commit herself fully to her own growth. At this point, the narration begins to favour first-person interior monologue, though it does not fully replace its disorienting mixture of third and second person. In achieving the use of "I," Mary, like Ursula Brangwen, has managed partially to free her plot from the cycles of hereditary return. Ironically, the freedom manifests itself as a reversion to individual potentiality and sense of purpose; well into her forties, Mary appears to be "growing younger every minute" (414).

Weismannism produces its defamiliarization by making human character and the individual life-span satellites rather than kernels in a greater, transindividual life narrative: "the chain of life is in a real sense continuous, and that the 'bodies' which die are deciduous growths, which arise round about the real links. The bodies are but the torches which burn out, while the living flame has passed throughout the organic series unextinguished" (Geddes and Thomson 262). It is possible to read this as an extreme version of "reproductive futurism," an ideology that asserts "the absolute privilege of heteronormativity by rendering unthinkable" any alternative to the genealogical imperative (Edelman 2). But the division of germ and soma offers a more positive interpretation, derived from the very feature that made Weismannism seem amorally dysteleological to its early critics. In an 1891 article, Henry Fairfield Osborn argues that

> if the Weismann idea triumphs, it will be in a sense a triumph of fatalism; for, according to it, while we may indefinitely improve the forces of our education and surroundings, and this civilizing nurture will improve the individuals of each generation, its actual

> effects will be not cumulative as regards the race itself, but only as regards the environment of the race; each new generation must start *de novo*, receiving no increment of the moral and intellectual advance made during the lifetime of its predecessors. (363)

The picture of Weismannism painted by Osborn is less dire than he makes it seem. If every individual must learn from scratch, fostering good education and nurture is not only necessary but right; this is the basis, indeed, for the ideal of *Bildung*. We may recoil from the Weismannian view of our embodied selves as "deciduous growths" (Geddes & Thomson 262), and yet, as David Weir writes of Darwinism, "outright acceptance of mortality as an end in itself can be liberating" (xiii). Perhaps because Lamarckism and Neo-Darwinism tend (egregiously) to be polarized as left- and right-wing views, it bears pointing out Lamarckism is very much consistent with the sentence and sequence that modernists strive to disrupt, both formally and ethically. Osborn's apparently progressive belief in "cumulative . . . advance" implies that desirable traits are founded on a long, even pre-determined genealogical history, that individuals are how they are because they were born that way. By contrast, Weismannism denies that my experiences affect the genetic particles I might transmit to offspring, so I am more or less free to do as I choose with my deciduous growth! In other words, by breaking the link between development and genealogical, the distinction between germ and soma attenuates or alters the interpersonal configurations (the oedipal and love triangles, the nuclear family) that have for so long given structure to Western narratives and thought more generally. For Woolf in *A Room of One's Own*, for example, reproduction is patently not the beginning of death for the protagonists of the (fictitious) novel *Life's Adventure*. What Woolf finds refreshing and politically potent in this novel is a "sight that has never been seen since the world began": "Chloe likes Olivia and they share a laboratory," from which Olivia leaves every night to "go home to her children" and husband (91). More radical than the most daring New Woman novel, *Life's Adventure* grants its female protagonists a true affinity, uninfluenced by male interests, and allows them not to make the (often tragic) choice between self-fulfillment and family life, including reproduction. Olivia is,

without contradiction, a mother and a scientist working for the public good on a cure for "anaemia" (90). But it is not the all-or-nothing model that results in the successive disappearance of parents from the narrative of *The Rainbow*. I don't claim that such effects depend on Weismannism or any other model of heredity, of course—simply that they are more congenial to the separation of germ and soma that Weismann theorized. To appreciate more fully the narrative complexities of modernist genic novels, however, we must move on to another paradigm, one that further complicates the counter-intuitive features of Weismannism.

MENDELISM AND MODERNISM

"With the year 1900 a new era begins," writes William Bateson of the rediscovery of Gregor Mendel's theories (*Mendel* 7), anticipating Woolf's more famous claim for December 1910. Indeed, in the second sentence of *The Modernist Novel* (2011), Stephen Kern hints that "the rediscovery of the work of Gregor Mendel in 1900," which "revolutionized knowledge of hereditary transmission in showing that characteristics of organisms do not blend in offspring but are transmitted in discrete units according to specific laws," bears some relation to modernism's "absent protagonists, fragmented characters, 'trivial' events, [and] probabilistic causality" (Kern 2, 1). Like quantum mechanics, which views energy as discrete packets (quanta) rather than as a continuous stream, Mendelism sees heredity as the transmission of discrete atoms (genes). Also like quantum mechanics, it assigns a central role to chance.

The random nature of genetic transmission undermined notions of progress, including the progressivist and teleological appropriations of Darwinism that flourished in the late nineteenth century. In addition, Mendelism assumes that the origin of evolutionary novelty is the random and spontaneous emergence of new genetic characters. The origin of new species is thus a process not of gradual adaptation and amelioration but of "mutation" (de Vries ix). More disturbing still, as Hugo de Vries observes,[14] mutational origin of new traits, though it can give natural selection some useful new traits on which to work, can also produce change *despite*

natural selection: "the mutation theory gives a perfectly simple explanation of the existence of such characters ["of doubtful value"]; for useless, but not dangerous, mutations must appear as often as useful ones, and have almost as much likelihood as these of persisting" (65).

The weirdest implication of Mendelism was its mosaic model of inheritance, explained with enviable clarity in Simon Mawer's fascinating novel *Mendel's Dwarf* (1997). Mendel discovered

> that each inherited character is determined by individual, distinct particles carried by the egg and by the pollen. That, for each simple inherited character, every offspring gains one such particle from its father and one from its mother. That the particles remain distinct and identifiable even though contrasting ones might temporarily come together in an individual. That you can follow the movement of these particles down through generations and that they are passed onto the offspring just as they were gained from the parents. That pure luck determines which of two differing characters is passed on. (94)

What's more, each genetic particle is transmitted independently from the others. Sexual reproduction thus shuffles genes like cards, producing different combinations without affecting the integrity of individual genes. Mendelism therefore retains Weismann's separation of germ and soma but complicates the model by fragmenting the germ-line into thousands of independent germ-lines, each on its own genealogical trajectory. In 1916, Jacques Loeb complained that "the difficulties" in the study of heredity

> have been rather increased than diminished by the discovery of Mendelian heredity, according to which each character is transmitted independently of any other character. Since the number of Mendelian characters in each organism is large, the possibility must be faced that the organism is merely a mosaic of independent hereditary characters. If this be the case the question arises: What moulds these independent characters into a harmonious whole? (qtd. in Sapp 317)

To this question Reginald Punnett answers baldly that once all unit-characters are known, one "may proceed to build up synthetically, character by character, the plant or animal" (78). The notion of the individual as the synthetic product of discrete unit-characters follows from the Mendelian view of "heredity … as a method of analysis"—analysis here meaning the dissociation of a whole into its parts; thus, Punnett asserts,

> the individual is an aggregate of unit-characters, and individuality is the expression of a particular aggregation of such characters . . . . [T]he factors on which these characters are based behave as independent entities during the hereditary process, and heredity in consequence we may regard as a method of analysis, enabling us to judge of the number and condition of the unit-characters which go to make up the individual. (74–75)

Punnett, of course, is speaking here as a geneticist; like the speaker of Hardy's "Heredity" the individual itself is not his focus. Such reductionism has its uses, but I doubt that Punnett in his daily life thought of himself or anyone else as "an aggregate of unit-characters." Writing in 1922, J. P. Lotsy issues a reminder that there is always also the perspective of the organism: "an organism is not a mere aggregate of a limited number of mutually independent living particles, it is an entity and life is a property of the whole . . . . not of separate genes" (394). Lotsy echoes Weismann when he insists on "the fundamental difference between the point of view of the gene-conception . . . and the physico-chemical conception" of the developing individual (395). This is not to say that the Mendelian view had no effect on our view of the individual. One of the first implications to emerge from Mendelism was that the insidious notion of genetic purity, formerly applied to individuals or races, could only apply to "a *single* character," which almost inevitably coexists in the organism with numerous other "impure" characters (Yule 223). As early as 1902, G. Udny Yule insists that Mendelism "is a law applying to aggregates and predicates nothing concerning the individual" (227). Nearly forty years later, E. M. Forster would invoke "the civilizing figure of Mendel" in order to debunk the Nazi's "ridiculous doctrine of Race Purity" (*Two Cheers* 19, 18).

Still, because inheritance has historically and continues intuitively to transmit aspects if not the whole of a personality, the Mendelian decomposition of the germ-line into a mosaic of independent particles is profoundly estranging and thus, for a certain type of writer, rife for literary exploitation. Mendelism complicates my two-plot model of the genic novel, which boasts a human (somatic) plot and a genetic (germ-line) plot. Mendelism would, in theory, divide the latter plot into innumerable genetic plots, one for each hereditary trait specified by the novel (yet few novels consider more than one or two such genetic trajectories, so the difference between Weismannism and Mendelism is usually negligible).

A loosely Mendelian logic accentuates the tragedy of Nella Larsen's *Passing* (1929). Its protagonist Clare Kendry strives to model the power of self-determination over biological and cultural inheritance. Passing for white, Clare marries rich and achieves wealth and social status unreachable to non-whites in turn-of-the-century America. But then Clare's *Bildung* is checked by the fear of a genetic return of the repressed. She already has a daughter, Margery, who is as light-skinned as she is, but she fears the possibility that the next child would express the genes of its black grandfather: "I nearly died of terror the whole nine months before Margery was born for fear that she might be black. Thank goodness, she turned out all right. But I'll never risk it again" (25). The deception that gives Clare the freedom to determine her own life also prevents her from living it, because her desire includes having a son she dare not have lest the genes tell on her. Heredity here is not, I would argue, Larsen's way to punish Clare for denying her true identity (the novel dismisses such notions); instead, Larsen allows reproduction to assert its dialogic function in the *Bildung* plot, exposing the impossibility of being without denying the desirability of becoming a fully self-determined person. As Clare understands inheritance, blackness and whiteness are independent traits that can spontaneously reappear intact (in the same way that the child of two brown-eyed parents can have its grandmother's blue eyes). Of course, skin colour is *not* a discrete Mendelian trait and does not manifest in the all-or-nothing manner imagined by Clare; the result of complex interactions between many genes, it varies

continuously between and within so-called racial groups (Strum). In any case, it is the general logic of Mendelian inheritance rather than a rigorous application of the science that makes Clare's life so inwardly conflicted and her developmental plot so self-divided.

The atomistic logic of Mendelism can also quite literally fracture the individual. While in the earlier novels of a writer like Zola, characters suffer the curse of both their lineages, in modernist novels characters can be fractions of actual and hypothetical parentage. Elizabeth Bowen hints at such a possibility in *The Last September* (1929). When Mr. Montgomery nostalgically imagines having married Lois's mother, Lois responds enthusiastically, prompting him to point out that had he done so "you wouldn't be here." Lois's reply is strangely profound: "Oh, but half of me would be. And I daresay . . . the other half of me would have been much nicer" (88). To Montgomery, this response simply befits a silly girl, but Mendelism offers the grounds for imagining "me" with the same mother but a different father: in Mendelian inheritance, the mother's and father's genes combine but do not blend in the offspring. Bowen does not pursue this line further; nor does the genetic logic appear to have formal correlatives in the narrative. But Lois's brief fantasy of a better, half-counterfactual self does shed some light on the torqued plots of E. M. Forster's novels, particularly *The Longest Journey* (1907). Dying while saving his maternal half-brother Stephen from a train, Ricky Elliot enables the "much nicer" half of himself to survive in Stephen's child (who inherits the name of the brothers' mother) while ending his hated paternal line (this severance is symbolized by the train cutting off Ricky's clubfoot, a hereditary curse of the Elliot line). Forster's other novels frequently involve such divisions of reproductive and developmental labour, particularly between siblings. The messy plot of *Howards End* (1910), once dismissed as mere sloppiness but since reclaimed for modernist and queer aesthetics, is equivalent (if not equal to) the enviable life achieved by Olivia in Woolf's rendering of *Life's Adventure*. Where one would expect one female protagonist to fulfill her destiny in both marriage and procreation, Forster allocates each end to each sister: Margaret marries but wants no children, while unmarried Helen has a child. With the depersonalisation

and atomisation of heredity that culminates in Mendelism, characters can choose not to submit to the genealogical imperative and yet can still have "their" genes transmitted to the next generation through their siblings. In other words, an individual can "contribute" to genetic continuity without ever engaging in reproductive sex. By implicating characters other than the *Bildungsheld*, genic novels can significantly deform the *Bildung* plot without departing significantly from the genre's concerns with development. In *The Longest Journey*, the narrative takes significant detours from the central plot of individual development, swinging several decades and a generation back to the courtship of Ricky's parents in Chapter 29 and finally shifting narrative attention to the niece who survives him and carries on his genetic legacy. This is not to deny Ricky the fulfillment of artistic and development, however: in the end, his book of stories is a success.[15]

By separating the developing body from the germ-line, and by dissociating this germ-line into innumerable gene-lines, Mendelism enables even more radical disaggregations of the human essence. In *The Second Sex*, for example, Simone de Beauvoir recognizes that Mendelism renders previous hierarchies of sexual difference incoherent by eliminating the gender of hereditary molecules and the dissolving the dominance of paternal processes in fertilization and inheritance: "according to Mendel's statistical laws," she writes, "transmission of hereditary characteristics takes place equally from the father and the mother. What is important to see is that in this meeting neither gamete takes precedence over the other; they both sacrifice their individuality" (27). Not unlike Beauvoir, Huxley notes in a 1922 review that "the historical fact that sex-difference was recognised before the nature of sexual fusion was understood or even discovered" has inextricably confused our understanding; this history dictates that "the word sex etymologically implies a difference" that has no simple genetic or cellular basis (188). Huxley's proof rests in a series of contemporary experiments on the genetics of sex determination, notably their discovery of Mendelian processes behind the production of intersex forms in several insects.

Huxley explains that intersexuality can result from the expression of mismatched genes. Normally, developmental rates throughout the body are coordinated, but when different varieties of moth are hybridized, this coordination is thrown off, resulting in "developmental intersexuality" (Huxley 197). To simplify greatly, all gypsy moths have both male and female genes, but one or the other develops faster and more dominantly than the other, producing a male or female moth; in hybrids, though, the two genes regulate developmental schedules at different rates, and the initially faster and dominant female gene, say, is later overtaken by the male. These intersexes are "sex-mosaics . . . *in time*. They start their development as normal females . . . and finish their career as males" (198). Though the result is typically individuals with mixed sexual traits, there are "cases of complete sex-reversal" (200).

The "new concept of developmental intersexuality" (Huxley 198) irresistibly invites a new look at one of modernism's strangest *Bildungsroman*. This may well be what Jean-Jacques Mayoux means when he writes, in his 1930 review of *Orlando* (1928), that Woolf's seemingly fantastical novel reflects "the very opinions of contemporary biology" (119). Woolf's narrator does not linger much on mechanisms when, halfway through the novel, the title character awakens from a long sleep to find himself a woman, noting merely that the causes of the metamorphosis are for "biologists and psychologists [to] determine" (*Orlando* 139). And although following this lead would require an essay to itself, I'll note that Orlando's sex change, combined with Woolf's well-known interest in moths and butterflies, makes it possible that the multiple developmental rates of Mendelian sex determination have something to do with *Orlando*'s multiple temporalities, the fact that "these selves of which we are built up, one on top of another," are temporally independent of each other. As the narrator proclaims, "For if there are (at a venture) seventy-six different times all ticking in the mind at once, how many different people are there not . . . all having lodgment at one time or another in the human spirit?" (308).

Nor is sex-change the only biological oddity in *Orlando*. Orlando's longevity is no less impressive, the result being that development extends so long as to absorb and displace

genealogy almost entirely. I say almost because Orlando does bear a son. In her reading of *Orlando*, Aimee Armande Wilson contrasts Orlando's "involuntarily conceived son" (91) with the later publication of her book of poetry. While the "child of her body" is produced by the fertility of the nineteenth century, and at the expense of a woman's artistic realization, Wilson argues that the "child of her mind" is "born at the right time" in the modern(ist) twentieth century (86, 91). But Orlando's longevity suggests that biological procreation and artistic creation might not, after all, be competing for her time. Living four hundred years ensures that she can do both. Such a mad utopianism can only be satirical; Woolf's point may be that the charmed life Olivia enjoys in *Life's Adventure*, combining family with career, is about as fantastical in the late 1920s as the notion of a man who becomes a woman and ages 36 years in four centuries.

CONCLUSION

The oddities of modern genetics are difficult to harmonize with established ways of thinking and thus offered radically different answer to the *Bildung* plot to two of modernism's extreme figures: T. E. Hulme and Samuel Beckett. On the early and conservative end of modernism, Hulme countered the "spilt religion" of Romanticism (71) and its attendant aspirations of perfectibility with the assertion that "Man is an extraordinarily fixed and limited animal whose nature is absolutely constant" (70). For Hulme, Darwinism epitomizes the Romantic philosophy of individual and social progress because it

> suppose[s] that each step in evolution has come gradually, by an accumulation of favourable small variations. If that were true, then it would be possible to conceive that man himself might . . . gradually change into something better. But the theory of evolution which is now gradually accepted is that of De Vries. His Mutation Theory gives quite a different account of the origin of species. It supposes that each new species came into existence in one big variation, as a kind of "sport", and, that once constituted, a species remains absolutely constant. There would then be no hope at all of progress for man. (169)

Hulme's obituary for Darwin is greatly exaggerated, but he rightly observes that Darwinism was hard-pressed (at least initially) to accommodate models of discontinuous inheritance such as De Vries' and Mendel's. In any case, Hulme's thesis has fascinating implications for the *Bildungsroman*; what, after all, does the genre look like if individual learning and experience are, from a genealogical perspective, for nought? In other words, what happens to the genre's constitutive analogy of development, historical emergence, and national spirit if the species is absolutely fixed? A Hulmean *Bildungsroman* might then have looked like Wyndham Lewis's *Tarr* (1918), whose protagonist doesn't develop but rather alternates between two states; he also proclaims, apparently for his author, that "the ideal of perfect Success is an invention of the same sort of individual as the propagandist of Equal Rights and the Perfectibility of the Species" (333).

At the opposite historical and political end of modernism stands Beckett, whose fictions contrast with Hulme's aesthetics by tending towards irrepressible flux. In *Molloy*, the fact of having been born does not confer an obligation to perpetuate the genealogical cycle. Instead, Molloy inherits the means to live apparently forever, obviating the need to replace the self through reproduction. "Ah the old bitch," he curses his mother for his longevity, "a nice dose she gave me, she and her lousy unconquerable genes" (89). In *Malone Dies* the same fate represents a frustration of historical and genealogical progress. Macmann, we learn, is just

> the son and grandson and greatgrandson of humans. But between him and those grave and sober men, first bearded, then moustached, there was this difference, that his semen had never done any harm to anyone. So his link with his species was through his ascendants only, who were all dead, in the fond hope they had perpetuated themselves. But the better late than never thanks to which true men, true links, can acknowledge the error of their ways and hasten on to the next, was beyond the power of Macmann, to whom it sometimes seemed that he could grovel and wallow in his mortality until the end of time and not have done. (273–74)

As usual for Beckett, nothing succeeds like failure. If Macmann fails to be a "true" man and link, so much the better; his failure serves to question the value of "true" manhood and the linking of reproductive futurity. Macmann's parody of immortality is his equivocal reward for repudiating the myth that his children would right what he had mucked up. By breaking the genealogical sentence and sequence, he mirrors the formal strategies that make Beckett's poetics of decrepitude and restlessness so distinctive. For both Macmann and Molloy, the refusal to forge a "link with his species" through descendants is equivalent to "wallow[ing] in his mortality until the end of time." Similarly resisting the logic of linking in their syntax and plotting, Beckett's novels reinvent the biographical plot (*Bildung* hardly applies here) by reclaiming for the individual life the powers of indefinite going on that it sacrificed when it became complex and individuated—in other words when it invented sexual reproduction.

For Weismann, death is a historical accident, a side effect of complex, multicellular life that divides its functions between the mortal soma and the potentially deathless germ-line. Rival biologists, notably Götte, saw death as a "primary necessity" of life, the inevitable result of reproductive exhaustion. This view, which goes back to Aristotle, would seem to endorse the stark opposition of development and procreation we find in *The Rainbow*. But Weismann argues that "death . . . has been secondarily acquired as an adaptation" and "that life is endowed with a fixed duration, not because it is contrary to its nature to be unlimited, but because the unlimited existence of individuals would be a luxury without any corresponding advantage" (24). If death is an adaptation, an "expedient" for ensuring "the maintenance of the species" because "worn-out individuals are not only valueless to the species, but . . . even harmful" (130, 135), it is perfectly logical that the conditions that make it adaptive can be altered, defusing the antagonism between life and reproduction.

In his view of our possible immortality, Weismann probably didn't envision attenuated lives that "go on" endlessly, yet the crawling creatures of *Molloy*, *Malone Dies*, and *How It Is* suggest a return to the simplicity of primordial life while the self-replicating text of *The Unnamable*

approximates microbial multiplication-by-division. "Everything divides into itself," observes Malone, one of Beckett's characters who can't seem to "get on with my demise" (206, 268). Similarly cursed, the Unnamable has tried modelling his life on the progressive course of evolution but reverts time and again to unicellular beginnings: "my good-will at certain moments is such, and my longing to have floundered however briefly, however feebly, in the great life torrent streaming from the earliest protozoa to the very latest humans, that I, no, parenthesis unfinished. I'll begin again" (366). In *How It Is* (1961), Beckett offers another version of this "loss of species" (17) resulting from the merger of the developmental and genealogical plots.[16] The narrator's reduced biography ("my life last sate last version ill-said ill-heard ill-recaptured ill-murmured in the mud brief movements") also encompasses the span of biological evolution: "my life natural order more or less" is also the "vast stretch of time from there that moment and following not all a selection natural order vast tracts of time" (1). In effect, the content of the development plot absorbs the mechanism of the genealogical plot: forfeiting generational continuity, the life story can recruit the iterations of "beginning again" more typical of generational turnover than of developmental progress (*Molloy* 372). What remains may not conform to the trajectory of classical *Bildung*. And yet it moves—not on and up, but on and on (and on). Beckett thus radically reinvents the biographical plot and supplies the narrative momentum that, as frustrated as it is, gives his depressing texts such implausible vigour.

Beckett's novels are the *reductio ad absurdam* of the modernist *Bildungsroman*'s experiments with the two plots of development and genealogy. In another sense, though, his stylistic innovations anticipate the thematic explorations of cloning narratives.[17] By demonstrating to such extremes the ways in which genealogy constrains and yet gives meaning to individual life, Becket's fiction also parallels the struggles, especially stark in postcolonial and diasporic novels, to forge a future for their protagonists without denying the reality of biological as well as cultural roots. Salman Rushdie's self-proclaimed debt to Beckett is well known and hardly surprising; but the fate of going on despite not being able to go on has a much wider field in contemporary

Bildungsromane concerned with identity, exclusion, and self-fashioning. There is a definite family resemblance between the hereditary hauntings in modernist novels such as *The Longest Journey*, *Mary Olivier*, *Absalom, Absalom!* and *Wide Sargasso Sea* and the negotiations between individuality and history, nation, and tradition in post-War novels such as *The Tin Drum*, *Midnight's Children*, *Illywacker*, *Dreaming in Cuban,* and *The Heart of Redness*. All are genic novels: in one way or another, but always perversely, they deploy genealogy against the ideals of autonomy, self-determination, and creativity that animate the *Bildungsroman*. At the same time they reassert, by redefining or reinventing, what Lawrence calls "the tiny importance of the individual, within the great past" (*Rainbow* 304).

Notes

[1] See, for example, studies by Donald Childs, Lois Cuddy and Claire Roche, William Greensdale, and Dana Seitler.

[2] The conflict between heredity and biographical genres enjoys more attention in nineteenth-century studies; see Christine Ferguson; Alexis Harley; Heike Hartung, Christine Lehleiter, and Anne-Julia Zwierlein. On *Bildung* and biology more generally, see Helmut Müller-Sievers.

[3] Because Dawkins is so often misread, partly through his own fault, I should specify that my claim for a gene-centered plot does not in any way suggest that genes are "little personified agents or homunculi with wills and motives of their own," as Judith Roof puts it (74). Genes, like anything living, nonliving, or even abstract, can be narrative "actors" ("a unit equivalent to a noun phrase and individuated in such a way as to constitute an autonomous figure of the narrative world") without being an agent ("a human or humanized being performing an action or act; a character who acts and influences the course of events") (Prince 3, 4).

[4] Though often used to describe a property of language, Bakhtin's term "dialogism" can also refer to the interaction of two or more chronotopes, the spatialization of time that "provide[s] the basis for distinguishing generic types" (*Dialogic* 250–51). "Within the limits of a single work," writes Bakhtin, "we may notice a number of different chronotopes and complex interactions among them …; it is common moreover for one of these chronotopes to envelope or dominate the others … Chronotopes are mutually inclusive, they co-exist, they may be interwoven with, replace or oppose one another, contradict one another or find themselves in ever more complex interrelationships…. The general characteristic of these interactions is that they are *dialogical"* (*Dialogic* 252).

[5] Lawrence first tested this dynamic in *Sons and Lovers*, whose early chapters focus on Walter and Gertrude Morel (Gregory Castle calls this "the pre-history of *Bildung*" [105]), then briefly on eldest son William. Only when William dies does the narrative really begin to chart Paul's development. Though a reader might begin reading *Sons and Lovers* as a family novel, the ending retrospectively reframes the early chapters as pertaining to Paul. The generic split produced by the focal shift from Brangwen line to *Bildung* would have been even more acute had Lawrence succeeded in his plan to publish *The Rainbow* and *Women in Love* as a single novel.

[6] In *Philosophie zoologique* (1809), Jean-Baptiste Lamarck proposed that organisms develop according to the use and disuse of their organs, and that useful developments are then transmitted to offspring, resulting in progressive evolution. This model was the best scientific explanation for the facts of heredity until the last quarter of the century; Darwin himself relied on it. It was in the wake of Darwin's theory that heredity became a critical problem in biology. Mendel published his work in 1865, but they were effectively unknown until 1900. Weismann introduced his Neo-Darwinian model of the continuity of the germ-plasm in 1883. Mendelian and Neo-Darwinian conceptions of heredity initially seemed antithetical, but they came together in the Modern Evolutionary Synthesis of the 1920s to 1940s. The molecular revolution in genetics is marked by the description of the DNA double helix in 1953.

[7] Other theorists had already explained heredity as physical particles, including Darwin (pangenes), his cousin Francis Galton (stirps), and Hugo de Vries (unit-characters). Jane Oppenheimer writes that "atomicity, as elucidated by Dalton for chemistry, was implicit in the ideals of Mendel and Pasteur, and equally in the determinants postulated by Weismann" (161). Jan Sapp calls this view of heredity "the material link between generations" (315). The analogy between genetic transmission and viral contagion is thus fairly accurate; as Gal Gerson reports, contemporary critics of Weismann and Mendel worried that "the specialization that severed genetics' contact with social sensibilities was accompanied by a dissociation of present from past and future, both of which had now become inhabited by alien species" (103).

[8] Weismannism is the philosophical foundation for the current gene-centered view of evolution, popularly known through Dawkins' metaphor of the selfish gene. Indeed, Dawkins has stated that his views might be called "extreme Weismannism" (164).

[9] Early studies of the anti-Bildung narrative dynamics in *A Portrait* include Hugh Kenner's polemic in *The Kenyon Review*, Michael Levenson's fascinating essay on Stephen's diary, and Franco Moretti's epilogue to the second edition of *The Way of the World*. More recent studies by Jessica Berman, Tobias Boes, Gregory Castle, and Jed Esty have addressed *A Portrait*'s *Bildung*-defying gaps, digressions, and rhythms in detail.

[10] The full sentence from which Temple quotes is, "We have just emphasised the view of Goette and other naturalists, that reproduction is the beginning of death; which is not inconsistent with the apparent paradox, that local death was the beginning of reproduction" (258). Despite the reference to Goette's (i.e. Götte's) thesis on biological death, which Weismann "must strongly oppose" (Weismann 119), Geddes and Thomson's description, particularly their reference to "local death," is clearly steeped in Weismannism. I identify the source of Joyce's allusion in "A Source for 'The Most Profound Sentence' in *A Portrait of the Artist*."

[11] Geddes and Thomson rightly specify that, "as Weismann insists, it is more correct to speak of 'the continuity of the germinal protoplasm' than the continuity of the germ-cells" (262). By this they mean simply that it is the genetic material within sex-cells that lives on, not the cells themselves.

[12] See Joseph Valente's excellent articles on Joyce's treatments of "Homosexual Panic" and "Irish Masculinity."

[13] In the 1891 edition of *Principes d'économie politique* , Charles Gide (uncle of André), applies Geddes and Thomson's central thesis to questions of population and, implicitly, social policy: "As the fertility of any species appears usually to vary in inverse ratio to the development of the individuals of the species, … and further, as there appears to be *a physiological law which would seem to establish an antagonism between generative activity and cerebral activity*, we may hope that the fecundity of the human species is destined to slacken progressively in proportion to the intellectual and moral development of the individuals that compose it. (See Herbert Spencer's *Biology*, and *The Evolution of Sex*, by Professor Patrick Geddes.)" (Gide 323, my italics).

[14] Hugo de Vries, a Dutch botanist, anticipated many aspects of Mendelism before re-discovering Mendel's papers in 1900, along with two German biologists. Though his interpretations differ from Mendel's in the details, these details are not significant enough for me to differentiate between the Mendelism and de Vries' mutation theory. For a contemporary comparison of de Vries and Mendel, see W. J. Spillman.

[15] I give a fuller version of this argument in "Heredity, Kin Selection and the Fate of Characters in E.M. Forster's *The Longest Journey*."

[16] The Unnamable, instead of building progressively from "earliest protozoa to the very latest humans," continually cycles back to the beginning; the narrator of *How It Is*, futilely "waiting for things to improve," experiences "the fragility of euphoria among the different orders of the animal kingdom beginning with the sponges" (27).

[17] Beckett's disarticulated, reiterative narration is therefore a stylistic manifestation of the biographical chronotope's absorption of the genealogical chronotope. In cloning narratives, the absorption occurs instead at the level of content, the protagonist's life being extended indefinitely at the expense (or in lieu) of reproduction; see Fay Weldon's *The Cloning of Joanna May* (1989), Martha Nussbaum's "Little C" (1998), Eva Hoffman's *The Secret* (2002), Kazuo Ishiguro's *Never Let Me Go* (2005), and Duncan Jones's film *Moon* (2009).

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