When the Irish physicist and scientific naturalist John Tyndall (1820–93), a friend of Charles Darwin and fierce proponent of evolution, delivered his Belfast address in 1874, he did so amidst a particularly vituperative controversy between religion and science on the subject of human change. Since the publication of *The origin of species* in 1859, evolution, characterized by gradual change over long periods of time, became the predominant model of human ontogeny in the latter half of the nineteenth century. One of the last ideological challenges to the hegemony posed by the Darwinian or gradualist model was the narrative of instantaneous religious conversion. In its most traditional theological sense, the conversion experience represented that sudden transformation in individual psychology, ostensibly facilitated by divine intervention, from a state of non-belief to utter piety, an event late nineteenth-century psychologist and religious scholar William James famously describes in lecture ten of *The varieties of religious experience: a study in human nature* (1902), as ‘striking instantaneous instances […] when] amid tremendous emotional excitement or perturbation of the senses, a complete division is established in the twinkling of an eye between the old life and the new.’¹ From the 1870s on, a torrent of books and articles was devoted to the study of instantaneous conversion (especially its theological and political import for evangelical Protestantism), of which Edwin Diller Starbuck’s *Psychology of religion: an empirical study of the growth of religious consciousness* (1901) was one of the most influential. Furthermore, within the political register, conversion as a ‘catastrophist’ model of human ontogeny gathered wider significance as servant to or spoiler of British nationalism. As Gauri Viswanathan argues when studying cases of voluntary or forced conversion in nineteenth-century India, Ireland, and England, ‘conversion ranks among the most destabilizing activities in modern society, altering not only demographic patterns but also the characterization of belief as communally sanctioned assent to religious ideology’.² In a Darwinian age of social, political, and scientific gradualism, conversion was often viewed as not only a ‘spiritual but also a political activity’ as well.³

³ Ibid., p. xvii.
In light of Viswanathan’s study that masterfully historicizes conversion as a potent religio-political force in nineteenth-century Britain and Ireland, I want to focus more explicitly on John Tyndall’s promotion of evolution – and his corresponding negative review of change by instantaneous conversion – in the Belfast address as an implicitly political gesture to deploy scientific naturalism as a means to ameliorate religious and cultural divisions in Ireland. Moreover, by attending to Tyndall’s unique accommodation of spirituality to Darwinism, I also want to explicate how his work influenced the narrative structure of spontaneous conversion within the wide domains of religion, psychology, and Irish nationalism and poetry in the late nineteenth and early twentieth centuries. While Tyndall and his successors, like the psychologist William James, promoted possible configurations between conversion and evolutionist paradigms to the eventual endorsement of the latter as a model for psychological or political transformation, W.B. Yeats vehemently reacted against Tyndall’s evolutionist sympathies, and gradualism more generally, in the 1890s by summoning a return to social and political change via conversion narratives. This contest between conversion and evolution, all but resolved in the scientific world by the turn-of-the-century, continued with renewed vigour in Irish literary life as writers like Yeats and James Joyce attempted to forge out of Ireland’s various religious inheritances – ancient Celticism for Yeats, the Roman Catholic Church for Joyce – an aesthetic vision of colony.

One might say that Tyndall’s support for Darwinian evolution matched to his careful critique of ‘spontaneous generation’ in the Belfast address was part of a much wider secular reaction to conversion as a scientific, religious and political force in the latter half of the nineteenth century. Expressions against conversion in British political life is perhaps best exemplified by W.E. Gladstone’s pamphlet *The Vatican decrees in their bearing on civil allegiance: a political expostulation* (1874), in which Gladstone gives voice to the anxieties in Britain over a series of Catholic conversions. In his frothy invective against Rome, Gladstone insists that the English national formation, in both its political and theological instantiations, trumps the authority vested in the Catholic Church, an institution that he characterizes as corrosively atavistic, that had ‘refurbished and paraded anew every rusty tool she was fondly thought to have disused […] and had repudiated modern thought.’ Since Irish nationalism’s increasing identification with Catholicism after Daniel O’Connell, Gladstone’s apprehension about the potential rifts within Britain on questions of religion and national allegiance might also be deigned a thinly veiled censure of Irish Catholicism as a competing national formation. ‘The response of nineteenth century Anglican England to a spate of Catholic conversions,’

writes Viswanathan on the subject of Gladstone’s secular anxiety, was ‘interpreted as almost certain confirmation of the imperial reach of Rome as well as of the inexorable onslaught of Irish immigration’ into England. Thus, within the wider debates between science, politics, and religion in Britain and Ireland in the closing decades of the nineteenth century, the points of contact between nation and conversion were some of most theologically and politically volatile.

Within this contest over the political location of the Catholic in Britain, John Tyndall delivered his famous Belfast address in August 1874, the same year that Gladstone published his pamphlet decrying the influence of Rome over British national life and that J.H. Newman replied in the affirmative to Gladstone’s query if Catholics can be trustworthy subjects of the state with the measured reply, ‘I see no inconsistency in my being at once a good Catholic and a good Englishman’. Tyndall, with his pertinacious evolutionism, was likewise interested in such matters of faith and self-determination that so inflamed Gladstone and Newman, and he deliberately entered the fray with the intent, as he wrote to friend and colleague T.H. Huxley, to ‘be true to himself’ and to forward his career commitment to scientific naturalism, Darwinism, and a materialist worldview that argued evolution’s ‘general harmony with scientific thought’.

His agenda in the Belfast address, however, was very different from either Gladstone’s political angling or Newman’s theological defence. Tyndall firmly believed that scientific thought based on evolution and materialism would modernize Ireland and pry scientific learning from the grip of the Irish Catholic hierarchy. His *Apology for the Belfast address* (1874), published shortly after his lecture in Belfast, in no uncertain terms admits as much. In this short essay that re-states the central points of the address itself, Tyndall comments on the intellectual oppression waged in Ireland by ‘Pope, Cardinal, Archbishops, and Bishops’; to accentuate this point, he cites a memorial penned in November 1873 by seventy students and ex-students of the Catholic University of Ireland and addressed to the Episcopal Board of their university. The epistle written nine months before the Belfast address interests Tyndall mainly because the students criticize the lack of training in the physical and natural sciences at the Catholic University and end by threatening that ‘if scientific training be unattainable at our University, [we] will seek it at Trinity or at the Queen’s Colleges, in none of which is there a Catholic Professor of Science’. Thus, both before he delivered his Belfast address and in its tem-

---

pestuous aftermath, Tyndall saw a need to defend and promote science against theology for the betterment of scientific learning in Ireland. This discontent with the Irish Catholic hierarchy manifest in the student memorial also signalled for Tyndall a much greater and imminent cultural change in Ireland that he illustrates in the Apology: 'Though moulded for centuries to an obedience unparalleled in any other country [...] the Irish intellect is beginning to show signs of independence; demanding a diet more suited to its years than the pabulum of the Middle Ages.' Here, what is most obvious in Tyndall's remarks on Ireland is his strong bias for science as the overarching palliative for cultural and religious debates.

Significantly, the most controversial claims within the Belfast address aimed explicitly at fostering this separation of 'the Irish intellect' from the Catholic Church had been evolving throughout Tyndall's early career. Tyndall was born in Leighlinbridge, Co. Carlow circa 1820, trained in mathematics, surveying, and bookkeeping as a young man, and worked for the English Ordnance Survey before leaving to study physics, chemistry, and mathematics at Marburg University in Germany, where he received his PhD in 1851. His time in Germany, so Ruth Barton suggests, inculcated within Tyndall a life-long adoration of romanticism and idealism, especially as they found expression in the work of Kant and Fichte, intellectual influences he would later incorporate into his scientific studies. In 1853, Tyndall was appointed to the chair of the natural philosophy at the Royal Institution of Great Britain and, in the following decades, conducted experiments and published papers on radiation, meteorology, glaciology research, and infrared analysis, all too wide international acclaim. During the 1860s, Tyndall was a member with Huxley and Herbert Spencer of the 'X Club', a group dedicated to 'developing naturalistic conceptions of man, nature, and society that were consonant with the findings of contemporary science [...] and] were opposed to any external control of science, whether by political or theological authorities.' In the Belfast address, ideological textures of scientific naturalism – what might be called the advance of scientific conceptions of nature and society against religious or national orthodoxy – are plentiful, especially in Tyndall's prominent desire in the opening paragraphs to connect natural phenomena to their physical principles and his oft quoted conclusion that '[a]ll religious theories, schemes and systems, which embrace notions of cosmogony, or which otherwise reach into the domain of science, must, in so far as they do this, submit to the control of science, and relinquish all thought of controlling it'. Not surprisingly, Tyndall's knack for such declarative statements on evolution led many critics of the X-Club to misinterpret or simply overlook the group's core spirituality. On this subject, one recent commentator about the X-Club writes that

the 'essential religiosity of the dissident intellectuals [the X-Club] can scarcely be over-stressed'. In fact, one of the main reasons the X-Club invested such a high value in evolution was that, unlike traditional theology, it held out the possibility of human improvement, a quality of evolutionary theory that Tyndall intuited in Darwin's work and accentuated in his nearly two hour lecture. So, Belfast offered Tyndall a definitive and culminating moment to express his scientific and his spiritual sympathies, what Barton calls his 'natural supernaturalism' or 'pantheism' inherited from Thomas Carlyle and German romantic idealism.

Tyndall had in previous lectures discussed the relation of religion to science, the former ideologically and structurally subservient to the latter. Strikingly, these earlier lectures saw no inherent dilemma over the compatibility of Darwinian evolution with Christian theology, two discourses that Tyndall believed could implicitly co-exist, albeit in a qualified relationship that, as we will shortly see, he pinpoints in the Belfast address. In a lecture to the British Association for the Advancement of Science at Liverpool in 1870, he quite plainly related to his audience: 'Trust me, [evolution's] existence as a hypothesis is quite compatible with the simultaneous existence of all those virtues to which the term Christian has been applied.' If Tyndall qualified the essential religiosity of his scientific thought in Liverpool in 1870, why did the Belfast address delivered four years later elicit such a strong reaction from religious and lay authorities? As Tyndall would later write about this reaction, 'there must have been something in my particular mode of crossing it [experimental evidence] which provoked this tremendous "chorus of dissent".' So, as Tyndall speculated, the reasons behind this dissent must have resided somewhere in the combination of the religious atmosphere of Belfast in the 1870s, the particular structure of religious and scientific faith explicated in the address, and the critique of conversion, both the political and theological varieties, within the lecture's closing paragraphs.

By the time of Tyndall's lecture, Belfast was already well heeled by religious debate caused by the politics of conversion. Since the 'second reformation' of the 1820s, organizations like the Hibernian Bible Society carried the evangelical word through Ulster and attempted to win Catholics to Protestantism. As historian Gerald Parsons notes when discussing the consequences of the evangelical bid to convert, the 'numerical returns for such Protestant efforts were small and short term,' while the 'damage done to Catholic-Protestant relation-

ships on the other hand was enormous'. Furthermore, the popularity of the evangelical faith, indexed by the evangelical revival in Ulster in 1859, in combination with the disestablishment of the Church of Ireland in 1869 (effective May 1871), resulted in traditional Presbyterianism in Belfast taking on the texture of evangelical Protestantism by the time Tyndall stood at the pulpit. Relying upon conversion as a political weapon, evangelicalism in Belfast in the 1870s gave 'coherence and legitimacy to Unionist intransigence, and it also – through links with co-religionists on the mainland – heightened a sense that Irish Protestants would find security through the association of a "British" identity' because of its pronounced streak of anti-Catholicism that was even more divisive than the call for 'No Popery' amongst other nonconformists. Belfast evangelicalism thus went hand in hand with a stronger identification with British political identity. When Tyndall offered evolutionary science as a potential curative for religious and social sectarianism, it is little wonder that he could quite accurately report days after his lecture, '[e]very pulpit in Belfast thundered of me'. And indeed, many pulpits did. The Irish Catholic Church was singularly cantankerous, especially the Bishop's pastoral of 1875 that declared, 'under the name of Science, [Tyndall] obtruded blasphemy upon the Catholic nation.'

Much was at stake for Tyndall. When he addressed the Belfast congregation in August 1874, he did so not simply as a scientist voicing his evolutionist views, or even as a materialist testing religious faith (he had already done so in previous lectures). Tyndall spoke as an Irish scientist who had spent most of his professional life in England, as a lapsed Presbyterian turned pantheist, as a thinker committed to the social betterment inherent in science, and as president of the British Association in a city that had been for the previous twenty years a hotbed of conversion enthusiasm and religious dissent. The general scope of the lecture alone was probably enough to win the ire of Irish Catholics and union Protestants alike. The inflammatory thematic lines within the address itself consist of an analysis of matter through a fastidious and self-serving chronology of the atomic theory, a demand for scientific freedom from theological, political, or social restraints, an argument for the continuity of nature, and, finally, an admission that there are motivating forces beyond observable phenomenon unattached to traditional theology. Critical to this address are the rhetorical moves executed by Tyndall that promote evolution.

There is no doubt that Tyndall baldly fawns over Darwin. So much is the Belfast address saturated with evolutionist figures that the address itself under-

goes an evolution. It is not through mere oracular habit that Tyndall begins in evolutionist flair: ‘An impulse inherent in primeval man turned his thoughts and questionings betimes towards the sources of natural phenomena’. This trajectory originating in humanity’s first cognitive spark narrates the struggle between scientific and religious thought to the ultimate endorsement of scientific naturalism. And peppered throughout this discussion is the omnipresent figure of Darwin. Discussing ‘love and hate among atoms’ in Empedocles, Tyndall claims that the doctrine of the survival of the fittest had been partly enunciated; he also sees proof for this doctrine on the atomic level when reading in Lucretius about competition between atoms. Tyndall writes that ‘the fit ones persisted, while the unfit ones disappeared’. Locating evolutionist schemes within the work of the ancients serves as prelude, of course, to crowning Darwin as the scientist who naturalizes evolution and gradualist models of change into modern science.

Complementing this support of Darwinian gradualism is the simultaneous negation of instantaneous conversion. In the address, Tyndall uses conversion to describe natural as well as theological phenomena. When discussing the conservation of energy, for example, he stresses the incompatibility of instantaneous change with scientific observation of the natural world. He reports that ‘the vegetable world was proved incompetent to generate anew either matter or force […] The animal world was proved to be equally uncreative.’ In context, Tyndall’s critique of conversion occurred within the wider debates in the scientific community about ‘spontaneous generation’, a narrative of individual change that Tyndall takes up and vehemently refutes in the concluding sections of the Belfast address. Spontaneous generation – the idea that living things can suddenly originate from nonliving materials, that the inorganic can in an instant be converted into life – had been fiercely debated since 1860, and posed a problem for evolutionists and theologians alike. The idea that life could originate spontaneously obviously threatened the idea of a creator God. It also posed a problem for evolutionists and their profound philosophical assumption about the continuity of nature, the belief that ‘there were no sudden unbridgeable gaps between similar living forms, which would require supernatural intervention’. Because it was counter to his evolutionist faith in the continuity of the natural world, Tyndall came out against the pathologist Henry Bastian, the primary supporter for spontaneous generation within the scientific community, and, by the 1870s, his fierce campaign against spontaneous generation convinced many that the theory was incompatible with Darwinism.

For Tyndall, generation in nature does not spontaneously occur. As the thesis on the continuity of life (a cornerstone of evolutionist theory) suggests, change

happens only where there is demonstrable antecedent life. Interestingly, his refutation of spontaneous generation occurs within a particularly anxious moment in the Belfast address when Tyndall hits the empirical limits of materiality through observation. About this limitation, Tyndall writes:

Believing as I do in the continuity of Nature, I cannot stop abruptly where our microscopes cease to be of use. Here the vision of mind authoritatively supplements the vision of the eye. By an intellectual necessity I cross the boundary of the experimental evidence, and discern in that Matter which we, in our ignorance of its latent powers, and notwithstanding our professed reverence for its Creator, have hitherto covered with opprobrium, the promise and potency of all terrestrial Life.²⁶

The intellect extends beyond the range of the senses, and Tyndall must accordingly convert his argument from an empirical to a faith-based approach, one that acts as if the laws of materiality remain intact beyond observable phenomena. Tyndall’s quick answer is that they do, although the scientific questions posed by the mystery of unobservable phenomena, in which he still discerns the potent operations of materialism, precipitates a still greater question, one that Darwin encounters in the concluding moments of The origin of species; namely, what is the relationship between scientific materialism and the world beyond or before the senses, in the deep inner-workings of consciousness?²⁷ It is a question that the final sections of the lecture attempt to address.

Even though Tyndall claims that the individual cannot know the real nature of the external world, he believes that one can be assured of its existence and renders this argument through Mill, Kant, and Fichte. Despite his better attempts, what might be called the origin of things – the nature of life, matter, and consciousness – is, for Tyndall, ‘the operation of an insoluble mystery’. Consequently, he identifies two alternative paradigms, with which we are by now familiar, to illuminate this mystery. The first model deployed to explicate the ‘insoluble mystery’ is conversion or creation through spontaneous generation, a scheme that Tyndall rejects because it is, in its fundamental operations, ‘fashioned after the human model, and [acts] by broken efforts as man is seen to act’.²⁸ In this dazzling analogy, Tyndall argues that conversion is an artificial and manufactured narrative, modelled off the impulse to anthropomorphize the natural world. Conversion as herky-jerky anthropomorphism is then compared to evolution, which, as Tyndall emphasizes, describes how the natural world changes and continues according to its own laws. Here, Tyndall implies that if evolution proves the material basis for all observable phenom-

ена, it will eventually prove the material foundations for unobservable phenomena as well. So, on the macro and micro level, Tyndall theorizes change as the continuous interaction between species and environment, a self-assured gradualist paradigm that refutes the anthropomorphisms of change through spontaneous generation or instantaneous conversion, an argument he expands upon in his 1878 essay *Spontaneous generation*. This is the most explicit showdown between conversion and evolution within the whole of the Belfast address and, in Tyndall’s view, Darwin gains enormous relative strength from the comparison.

At the end of his lecture, Tyndall restages the confrontation between conversion as subjective experience and evolution as objective science within the individual psyche and imagines their interface in a slightly different way. Giving predominant weight to science, he divides the mind between objective knowledge (science, understanding, reason) and feeling (poetry, emotion, creativity, faith). These two sides of the human mind are necessary and moderately interdependent with the stipulation that, just as the Church should not muscle into scientific matters, feeling should not dominate intellect or objective knowledge. Tyndall somewhat accommodates religion to science by suggesting that, because objective knowledge satisfies only human understanding, feeling is necessary to motivate and vivify the understanding; objective knowledge alone is insufficient as a totalizing model of human consciousness. Thus, if conversion with its attendant emotional effects remains tethered to feeling and outside the fold of scientific belief, then it has a limited function in individual psychology that can, and to his mind should, accent objective knowledge. About this separation of scientific and aesthetic knowledge, Tyndall more pithily writes in his *Apology for the Belfast address*: ‘The Book of Genesis has no voice in scientific questions [...] It is a poem, not a scientific treatise. In the former aspect it is for ever beautiful: in the latter aspect it has been, and it will continue to be, purely obstructive and hurtful.’

Confining religion to the domain of feeling might also be called, in its Irish contexts, a thinly veiled allegory for transcending religious and political strife through the scientific method. The final paragraphs of his lecture, abundant with idealist claims to human improvement, testify to this end as the author figures universal betterment to be one of the more general, positive effects of science. For Tyndall, the ‘lifting of the life is the essential point; and as long as dogmatism, fanaticism, and intolerance are kept out, various modes of leverage may be employed to raise life to a higher level.’ While the Belfast address itself might strike one as vague on its national location or intended national audience, Tyndall’s subsequent *Apology for the Belfast address* is not. Here, Tyndall explicitly names Ireland and the Irish Catholic Church as the particular targets of his lecture. The true goal of his speech, so the final

moments of the lecture claim, has been to forecast a ‘religious vitalization of the latest and deepest scientific truth’, a strategic line which attempts to knead, for this Irish audience anyway, religious enthusiasm into the larger structure of scientific learning.

What began as a defence for the compatibility of materialism and evolution ends by offering a model of human psychology that compactly structures scientific thought and religious feeling into the channels of the individual psyche. Of such import was Tyndall’s work, both in the Belfast address and in his other essays more exclusively devoted to science and the constitution of the individual mind (for example, On the scientific use of the imagination, published in 1870), that theories on human ontogeny in the closing decades of the nineteenth century necessarily had to grapple with Tyndall.

I want to conclude by suggesting that spontaneous conversion as an atavistic social formation that troubles narratives of nation based on Darwinism (endorsed by, among others, Gladstone and Matthew Arnold in British political life, Tyndall in the domain of science, and William James within the fields of religion and psychology) gains significant momentum as a catalyst for political self-description and change in the Irish Revival in the 1890s, particularly in the early work of W.B. Yeats.

As a revivalist committed to discovering some ideal form of Irishness, Yeats in the 1880s and 1890s began assiduously to choreograph science and religion to the rhythm of ‘Celticism’ as proof for Irish exceptionality. In his youth Yeats read Darwin, Huxley, and Tyndall and prided himself on his refutation of traditional theology with passages lifted from the scientific naturalists. During the 1880s, however, he began to grow ‘homesick for a spiritual experience’. A disillusioned evolutionist, he turned to the study of world religions to help assuage his spiritual confusion, and the connections he forged between his theological and political efforts are evident in his 1897 essay ‘The Celtic element in literature’. Written during a period when the poet wanted to forge Irish nationalism on the backbone of a Celtic race theory that was numinous without the divisive turns of Catholic or Anglo-Protestant theology, Yeats cast his intellectual nets across a wide variety of scholarship and attempted to craft out of this heterogeneity a master design drafting religion and science into the service of the Irish nation. Yeats ultimately settled on a final version in the 1920s with his oblique A Vision (1926). But in the 1890s, he was just beginning to show his paces.

What Yeats extracts from Celtic literature is what Matthew Arnold and Ernest Renan, two previous theorists on Celticism, similarly unearth: a repository of pre-Christian, pre-modern structures of belief that react against ‘the

rationalism of the eighteenth century [... and] the materialism of the nineteenth century.' Yeats finds in Celticism, with its high degree of mysticism and pantheism, a profound narrative emphasis on instantaneous change. For the young revivalist fascinated by models of personal and political transformation, the characters active in Celtic literature enthral because they 'lived in a world where anything might flow and change, and become any other thing [...] unbounded and immortal'. Evident in Yeats's praise of metamorphosis in Celtic literature, characterized both by its political (in its unboundedness) and spiritual (in its immortality) content, is a deep-seated nostalgia for the conversion experience as a model for human change. For Yeats, studying these ancient sources promised to enliven the modern world and summon 'the vivifying spirit of excess' present in Celtic literature into the arts of modern Europe; to this end, he used ancient Irish sources centred on narratives of conversion to signal the means through which Europe may evolve towards adapting the symbolic movement, 'the only movement', as he wrote at the end of his essay, 'that is saying new things'. His poetry at the time was similarly enamoured with the conversion experience. 'Fergus and the Druid', from The rose collection (1893), stages this process of conversion as a condition of an ancient and privileged spirituality. The poem begins with Fergus speaking to the Druid, 'This whole day have I followed in the rocks, / And you have changed and flowed from shape to shape, / [...] / And now you wear a human shape, / A thin grey man half lost in gathering night', to which the Druid responds as if to summon a conversion within Fergus himself, 'What would you, Fergus?' In the Druid's presence, Fergus envisions conversion as politically and spiritually ennobling, however overwhelming such boundless change appears to be by the poem's end: 'I see my life go drifting like a river / From change to change; I have been many things / [...] / And all these things were wonderful and great'. Excommunicated from science in the dying years of the nineteenth century, conversion finds new life as a wonderfully contumacious literary device in Yeats who reminds us that, despite the near hegemony of gradualism, the desire for instantaneous change through radical psychological or political conversion was no less intense.

And perhaps this is why many of his modernist successors would, in narratives that gradually plot a character's psycho-social development, punctuate or cap this evolutionary course with an intense psychological conversion, otherwise know as an epiphany. Not all renderings of the conversion experience, however, are as sanguinary as Yeats. James Joyce's use of epiphany in Dubliners famously works in relative opposition to Yeats's Celtic conversion narratives. For example, the adolescent's morose realization at the end of 'Araby' is more qualified by how politically disabling it is: 'Gazing up into the darkness I saw myself as a creature driven

and derided by vanity; and my eyes burned with anguish and anger.\footnote{James Joyce, \textit{Dubliners} (New York: Penguin, 1993), p. 28.} As explicated in \textit{Stephen hero}, that sudden spiritual transformation from one state to another is, for Joyce, an \textit{epiphany}. But unlike Yeats's dynamic conversions, Joyce's epiphanies reveal the character's profound isolation in a given time and place, a socio-political history that the epiphany realizes rather than transcends and that confirms the character's unfortunate and unwavering paralysis.