

Technographies

Series Editors: Steven Connor, David Trotter and James Purdon

How was it that technology and writing came to inform each other so extensively that today there is only information? *Technographies* seeks to answer that question by putting the emphasis on writing as an answer to the large question of ‘through what?’. Writing about technographies in history, our contributors will themselves write technographically.

Writing, Medium, Machine

Modern Technographies

Sean Pryor and David Trotter



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Introduction

SEAN PRYOR AND DAVID TROTTER

‘Is not the machine today,’ asked Enrico Prampolini in 1922, ‘the new mythical deity which weaves the legends and histories of the contemporary human drama?’ (Prampolini 1922: 236). Prampolini’s enthusiastic futurism casts modern women and men as the playthings of mechanical gods that they themselves have made. But his proclamation of a machine age without precedent rather strikingly recalls the myth of origins recounted by the ancient god Prometheus, who, bound above a stage in Athens, announces that he has given to mortals the μηχανήματα or machines which shape their lives (Aeschylus 2009: 494). In classical Greek legend, after the gods had made human beings, animals, and other life-forms, they allocated to two brothers, Prometheus and Epimetheus, the task of distributing among these creatures the various gifts of nature (Plato 1924: 128-33). Stupid Epimetheus gave all the best ones to the animals, leaving human beings naked and defenceless. Clever Prometheus, understanding that human beings had somehow to clothe and protect themselves, stole fire from the workshop of Athena and Hephaestus, and donated it to them. Without fire, there would be no art, no craft, and no τέχνη (Aeschylus 2009: 444). To Prometheus we owe not just ships and chariots, but numbers and writing (γράμματα), that aid to the memory and mother of the muses (492). So the literary arts, from history to the theatre, have always been technological. Yet planes and tanks, Prampolini would have said, are machines of a different order from ships and chariots: machines which so massively supplement human agency as in effect to dwarf it. Literature had to get to grips with these new levels of mechanical supremacy, and it did so in part by reconceiving itself as a machine. Yet if technology is modernity’s upstart god, it is also older even than the first incisions on a Bronze Age tablet. In *Technics and Time*, Bernard Stiegler draws extensively on the work of the palaeontologist André Leroi-Gourhan, Marshall McLuhan’s eminent contemporary, to argue for the essential technicity of human evolution (Stiegler 1998). Stiegler’s sub-title is *The Fault of Epimetheus*: by ancient and modern account alike, history is pretty much prosthesis all the way down.

This collection of essays began as a collaboration between the Literature-Technology-Media research group in the English Faculty at the University of Cambridge and the Centre for Modernism Studies in Australia at the

University of New South Wales. Its contents reflect, without being defined by, the original motive for that collaboration: a feeling that the ‘question concerning technology’ (Heidegger 1977) could and should be posed of modernist literature more variously and in greater detail than it has been hitherto, and in such a way as to enhance rather than to diminish the status and urgency of more familiar questions concerning ‘literature’ and ‘modernism’. Criticism’s attention to modernism’s encounter with technology is by no means arbitrary. Prampolini, after all, was to hail his new mythical deity in the October 1922 issue of the little magazine *Broom*, which also featured art by Henri Matisse and writing by Blaise Cendrars, together with a drawing of Vladimir Tatlin’s projected monument to the Third International.

It is not unusual for critics and theorists today to reach for a technological vocabulary when describing and analysing works of art. We happily speak of the mechanism of narrative, whether or not the novel in question attends in any depth or with any insight to particular machines. This can seem a relatively new state of affairs, the product of an interest spurred by the ubiquity of new technologies in contemporary social and economic life. There has certainly been a surge of interest in modern literature’s interactions with the technologies of its historical moment, from Hugh Kenner’s *The Mechanic Muse* (1987), through Tim Armstrong’s *Modernism, Technology, and the Body* (1998), to a great many monographs and collections published in the last decade (Daly 2016). But though that surge shows no signs of abating, the discursive strategy – the freedom and the eagerness to speak of literature in technological terms – is not new.

As early as 1904, Charles Sears Baldwin praised Edgar Allan Poe for having simplified his ‘narrative mechanism for directness of effect’. This represents ‘the clue to Poe’s advance in form, and his most instructive contribution to technic’ (Baldwin 1904: 19). The language of machines allows Baldwin to measure Poe’s aesthetic success, because a machine typically performs its work efficiently and repeatedly. The machine allows Baldwin to think of form as performing work upon content, and to relate the traditional forms which Poe inherited to the new forms which Poe bestowed on his successors. A similarly general notion of mechanism was useful to William Wordsworth, when in the 1802 version of the preface to *Lyrical Ballads* he explained why so few of his poems employ ‘personifications of abstract ideas’ (Wordsworth and Coleridge 2005: 295). ‘I have endeavoured utterly to reject them as a mechanical device of style’, he writes. Here, too, a technological discourse presents a form which can be put to work repeatedly, on a variety of materials. But for Wordsworth this automatic mechanism proves, very often, culpably indifferent to particulars: the machine means aesthetic failure. Instead, he concludes, ‘I have wished to keep my Reader in the company of flesh and blood’. If Wordsworth thus invokes a common opposition between organism and mechanism, the human and the inhuman, this was and is only one of technology’s possible connotations. ‘The association of machines with

ugliness or discomfort or pandemonium is very strong', Ezra Pound once remarked (Pound 1996: 59); and he recommended that, nevertheless, the aspirant artist 'might, in our time, more readily awaken his eye by looking at spare parts and at assembled machinery than by walking through galleries of painting or sculpture' (57). We 'find a thing beautiful in proportion to its aptitude to a function', he explained (69). And in the 1800 preface, offering an account of the development and psychology of the poet, Wordsworth writes: 'if we be originally possessed of much organic sensibility, such habits of mind will be produced that by obeying blindly and mechanically the impulses of those habits we shall describe objects and utter sentiments of such a nature [that the reader] must necessarily be in some degree enlightened, his taste exalted, and his affections ameliorated' (Wordsworth and Coleridge 2005: 292). Here the blind automatism of the machine enables flesh and blood, and this efficient mediation means aesthetic success.

Whatever their connotations, such abstractions stand at a considerable remove from the machines characteristic of the day, whether the steam engines of 1800 or the electric trams of 1904. This level of generality is common and powerful. To take a much more recent instance, consider the shrewd and historically informed reading of T.S. Eliot's quatrain poems in Vincent Sherry's *Modernism and the Reinvention of Decadence*. Sherry argues that Eliot's rhymed tetrameter quatrains present 'an extreme regularity of cadence, formalized by often strong rhymes', and that this generates 'an energy of palpably mechanical character' (Sherry 2015: 253). Sherry is careful to note that Eliot's contemporary critical writings demonstrate some interest in the mechanical aspects of literary technique, to acknowledge the influence on Eliot of Gautier's 'recognizably mechanical cadence' (253), and to link Eliot's mechanical prosody to the Great War, 'the negative apocalypse of modern technology' (254). The 'machine-made feeling of these tetrameter quatrains' thus reflects an age in which 'the machine has lost its discernibly human value or utility and stands as the sign of antihuman times' (253-4). Moreover, Sherry's readings distinguish the mechanical regularity of, say, the first stanza of 'Sweeney among the Nightingales' from the 'variable cadence' of the last stanzas of 'Burbank with a Baedeker: Bleistein with a Cigar' (259). The heavy caesuras and enjambments in the latter poem produce a much less mechanical effect: 'To climb the waterstair. Lights, lights, / She entertains Sir Ferdinand // Klein' (Eliot 1969: 41). For Sherry, writing thus confronts technology not through representation, but through the mediations of form.

There seems reasonable warrant for thinking that Eliot associated the modern machine with inhuman automatism, most famously in the 'automatic hand' of the typist in *The Waste Land*, who reaches to put a record on that symbol of mechanical reproduction, the gramophone (69). In a sense, the fact that Eliot's quatrain poems refer so rarely to new technologies necessitates Sherry's turn to prosody. Nevertheless, the 'hundred A.B.C.'s' in 'A Cooking Egg' – the tearooms of the Aerated Bread Company in which 'weeping

multitudes' consume 'battered scones and crumpets' (45) – do invoke the mechanical method of making bread invented by John Dauglish in 1862. Dauglish 'aerated' or leavened his bread, not by using yeast, but by dissolving carbon dioxide into the mix. There was thus no need for fermentation or for kneading by hand: the process could be automated, and the costs of labour were greatly reduced. But as an emblematic modern technology, aerated bread is very different from the Vickers machine gun. If both are consequences of industrial capitalism, the one suggests mass production, the other mass destruction. Other technologies appear in these poems, too, with their own histories and their own social meanings. When Sweeney 'Tests the razor on his leg' before shaving himself in 'Sweeney Erect' (43), Eliot deploys a tellingly anachronistic technology, for by 1919 the modern safety razor had displaced the traditional cut-throat razor. Much like an A.B.C. crumpet, the disposable safety razor represented mass production, and the Gillette safety razor had, in fact, become the market leader during the Great War, offering soldiers a convenient and effective means for staying clean-shaven on the front (Boddy 2015: 8). Sweeney's antiquated razor seems as good a figure for the sharp wit and repressed violence of Eliot's rhymed tetrameter quatrains as contemporary military apocalypse.

To think of a poem's prosody as reflecting the machine as such or the machine gun in particular, even before the poem is broadcast on the radio or coded as HTML, is to think of writing mediated by technology. But the converse, we want to argue, is equally important: writing mediates technology. It does so because writing is itself a τέχνη or art. Rhymed tetrameter quatrains are a form which can be put to work repeatedly, on a variety of materials. Eliot's form is what Baldwin calls a 'technic': the technology is in the technique. Though it seems reasonable to think Eliot associated the modern machine with inhuman automatism, it is not necessary to associate inhuman automatism with a poem's regular cadences. Rhymed tetrameter quatrains without heavy caesuras or enjambments could instead be considered sharp, witty, decisive, elegant, or sophisticated. Our sense of the form is formed, inevitably, by the content it in turn forms. Even quatrains whose lines divide into neat couplets with parallel syntax, and whose lines seem to establish 'an extreme regularity of cadence' –

Apeneck Sweeney spreads his knees
 Letting his arms hang down to laugh,
 The zebra stripes along his jaw
 Swelling to maculate giraffe. (Eliot 1969: 56)

– make of those constraints the occasion for virtuosic variation: the parallel assonance in a single line of '-neck' and 'spreads', 'Sween-' and 'knees'; the twin stresses of the compound word 'Apeneck', echoed but transformed by the twin stresses of noun and verb in 'arms hang'; the unthinking passivity of

‘Letting’ matched and inverted by the brute activity of ‘Swelling’; the relative lack of stress on the last syllable of ‘maculate’, giving the last syllable of ‘giraffe’ a weight quite unlike that of the first three lines’ monosyllabic rhyme words; and so forth. Moreover, when Sherry registers the difference between one stanza’s extremely regular cadence and another stanza’s much more variable cadence, he recognises that the labour performed by the poem’s mechanism is far from indifferent to particulars. The making of this verse is not like the production of bread or bullets; a general form and particular contents are instead brought into meaningful relation. Unwilling to reduce literature to the reflex of a particular technology or an abstract concept of technology, the essays collected here take the τέχνη of writing seriously.

Eliot is not the subject of any of those essays. However, we thought it right, given the origins of the collection, to invite contributions which examine the various technical-technological predispositions of other canonical modernist writers. Mark Byron considers the work of Eliot’s friend and collaborator, Ezra Pound, exploring the ways in which *The Cantos* emulate the textual technologies of medieval manuscripts, early modern printing, and modern scholarship. In deluxe editions complete with illustrated capitals, in experiments with page space and typography, in the use of textual apparatus such as glossing and citation, and in its adventures in bibliographic history, Pound’s poetry foregrounds the materiality of text as an information technology. Paul Sheehan turns in his essay to literature’s encounters with another system for communicating and controlling information: encryption. Looking in particular at Stéphane Mallarmé and James Joyce, Sheehan rethinks the perennial problem of modernist difficulty by examining how these writers developed an aesthetic of the coded word. Unlike the famous Enigma machine used by the Germans in the Second World War, modernist encryption, Sheehan argues, is a machine not for securing but for multiplying meanings. The difference between literary and other modern technologies is also a theme in Sean Pryor’s essay on the poetry of Pound, Wallace Stevens, W.B. Yeats, and others. Pryor’s essay begins by linking the increasing prominence of measuring instruments in life and in language – from thermometers to ‘business barometers’ – to the efforts of late nineteenth- and early twentieth-century acoustic scientists to graph performances of poetry and so to develop a materialist metrics. Responding to the rise of empirical measurement, which seemed to many to reduce all things to mere quantity, the measures of modernist poetry asserted the necessary and mutual mediation of quantity and quality. Through analyses both of metrical verse and of free verse, Pryor shows how this poetry understands itself anew as its own form of measurement technology. In comparable fashion, Kasia Boddy’s essay first details the history of electrical tabulating machines used, from the 1890s onwards, to gather census data in the United States. She then reflects upon how new technologies for measuring populations affected the aesthetic techniques and ambitions of the Great American Novel, most notably in

the work of Sinclair Lewis and Gertrude Stein. Here, too, as Boddy argues, literature is put to work in mediating between quantity and quality, generating in the process new forms of aggregation and abstraction.

These essays treat a variety of devices: punch-card machines, kymographs for imaging speech, enciphering and deciphering machines used by the military, microfilms for preserving and reproducing medieval manuscripts. Many of the collection's other essays dig down into the rich array of machines, devices, tools, procedures, and other τέχνην shaping the world in which modern poems and novels went to work, which is also the world on which they worked. The English term 'device', in particular, is for our purposes a rich one: its senses range from mechanical invention through emblem, masque, or witty conceit to will, fancy, and desire. Our topic is not literature and technology, then, but writers left to their own devices. To that end, we have also encouraged contributors to focus on the sorts of technological device to which writers might have been left, from the middle of the nineteenth century onwards. Kristen Treen traces the history of the stereopticon from the 1850s and 1860s, when it was used both for entertainment and as therapy for the mentally ill. The stereopticon offered an ordering mechanism: its images brought audiences together, represented objects in spectacular detail, and gave those objects a remarkable new solidity. But as Treen shows, the fiction of the time expressed concerns that the stereopticon might show too much: that it might reveal the individual's innermost desires and thoughts. And for William James and Stephen Crane, the stereopticon's magnification, dissolves, and other effects offered metaphors for the experience of consciousness. James Purdon's essay turns from visual to textual technologies, beginning with the invention of mechanical printing telegraphs in the 1840s. These in turn led to the development of the teletype machine later in the century, a once ubiquitous technology now almost entirely forgotten. Examining advertising materials, technical descriptions, and appearances in literature and film, Purdon shows how the teletype established its own social rituals and rules. In the newsflash, moreover, the teletype helped to reconfigure twentieth-century media around the idea that an instantaneous transmission could at the same time be an historical record.

Robbie Moore approaches a similar phenomenon in his essay on the stock ticker, first introduced at the New York Stock Exchange in the 1870s. The stock ticker was both a machine and a network; it allowed instantaneous transmission, but the quick movement of its tape meant not a permanent record but a constant anticipation of the future. As Moore argues, the novels of Frank Norris, Will Payne, and others imagine the ticker-tape reader as a heroic figure who could grasp capital in its totality. And in the 1930s, Archibald MacLeish and Bob Brown look to the peculiar temporality of ticker-tape to reconfigure literary form itself. Finally, Beci Carver's essay explores the influence on twentieth-century literary form of a very different device, the slot machine. But like the stock-ticker, the slot machine represents capital: it

dispenses commodities for coins, and its interior workings are inaccessible, unknowable. Canvassing works by Elizabeth Bishop, Louis MacNeice, John Rodker, John Steinbeck, H.G. Wells, and others, Carver traces the history of the slot machine as a site of mystery and arbitrariness, the object of fantasy and frustration.

It is this focus on the archaeology of specific devices which distinguishes the essays we have collected from research conducted under the rubric of ‘literature and science’. Scholars have built informatively on the work of Gillian Beer (Beer 1996) to describe the circulation of concepts and models between or among scientists of one kind or another and writers of one kind or another, and to show how this circulation helped to bring about a ‘vibratory modernism’ (Enns and Trower 2013). Despite significant emphases to the contrary (Latour 1990), such studies have on the whole tended to subsume into the knowledge produced the instrument that led to its production. Our willingness to attribute agency to devices as well as to people squares with recent developments in the history and theory of a further cognate term: media. Over the last ten years or so, the conversation about the literature of Prampolini’s modern machine age has broadened significantly to include various and inventive enquiries into the development of the major storage and transmission technologies which achieved institutional status as mass media during the first half of the twentieth century: cinema, radio, telephony, television (Trotter 2016). The main focus of research has been on media understood as inherently powerful systems for the distribution of messages and meanings. More recently, however, a different understanding of what constitutes τέχνη has begun to throw a critical light on the reification of modern technological mass media as that which literature is doomed either to resist or to embrace.

Recent media theory has undertaken a fundamental re-examination of the idea of a medium: that’s to say, of what it means to be *in the middle*. It now speaks of a mediality which includes, but is not restricted to, systems for the distribution of messages and meanings. McLuhan’s once-inflammatory insistence that all media are bodily ‘extensions’ has begun to look like confirmation of an enduring sense of the absolute centrality of the medial dimension of human life (McLuhan 2001). When John Durham Peters claims that for many philosophers there is no such thing as a ‘media-free life’, he has in mind Friedrich Kittler, the most influential media theorist since McLuhan, as well as Kittler’s great precursor, Martin Heidegger, but also Emerson, Thoreau, and William James (Peters 2013: 45). John Guillory, by contrast, has traced the history of mediation as an intercession between alienated parties back to the mythology of the self-sacrifice of Christ the Redeemer and then forward again through Hegel and Marx. The economic, social, and political complexities consequent upon runaway industrialization gave rise to a theory of mediation in general as a way (the only way) to grasp both the scale and intensity of the relations thus newly established. It became the habit in modern

Western thought to present mediatory agencies as ‘*necessarily* characteristic of society’ (Guillory 2010: 343). In the twentieth century, media assumed the shape of entertainment industries. Now they are once again what they always were: ‘modes of being’ (Peters 2015: 17), ‘world-enabling infrastructures’ (25). According to Peters, all complex societies have media ‘inasmuch as they use materials to manage time, space, and power’ (20). Media, in short, have been ontologized, pluralized, and back-dated to the dawn of civilization.

There are, of course, many different shapes and sizes to life’s medial dimension, and media theorists have taken an interest in most of them. The times we live in seem nonetheless to demand increased attention to a mediality beyond the human scale. Peters’s ‘philosophy of elemental media’ borders on anthropology, zoology, and theology. According to him, earth, water, fire, and air, while not ‘media in themselves’, become so ‘for certain species in certain ways with certain techniques’ (49). Some theorists prefer to speak of ‘cultural techniques’ rather than of media. A cultural technique creates the end to which it will come to be regarded as merely the means. Bernhard Siegert, the leading exponent of the theory of cultural techniques, describes these concatenations of mechanism and gesture as ‘operative chains’ that precede the media concepts they generate (Siegert 2015: 11). In them, as Cornelia Vismann has put it, resides the ‘agency of media and things’. Their purpose is the ‘execution of a particular act’ in accordance with a built-in scheme or manner of proceeding. No wonder, then, that they should seem to possess an ‘almost algorithmic dimension’ (Vismann 2013: 83, 87). There is a connection, here, with the study of science and culture, or at least with Bruno Latour’s actor-network theory. Siegert compares cultural techniques to Latour’s ‘immutable mobiles’: sets of standardized data which can be transported intact from one site to another (Siegert 2015: 122-3, 148-9, 209).

Here is a little story culled from the theory of cultural techniques. Human beings decide to civilize themselves by building a city. They use a plough to draw a line in the ground which marks out the city limits. The line generates the distinctions between inside and outside, culture and nature, ‘us’ and ‘them’, necessary to the creation of a new order. Everyone forgets about the plough – until media theory, which is here to remind us that ‘the agricultural tool determines the political act; and the operation itself produces the subject, who will then claim mastery over both the tool and the action associated with it’ (Vismann 2013: 84). The theory of cultural techniques does not hesitate to put the cart before the horse. Indeed, it puts the cart before the animal that controls the animal that pulls the cart.

While none of our contributors has (yet) signed up as a theorist of cultural techniques, the tendency in media theory exemplified by the work of Siegert, Vismann, and others does find echoes here. John Attridge, for example, begins his analysis of the fiction of Henry James by drawing attention to the ways in which *What Maisie Knew* blurs the line between things we would not find it hard to describe as telecommunications media and things that at first

seem to belong in a different category altogether: a wink, a roll of the eyes, a compression of the lips, a ‘quick queer look’, a small child. Attridge is able to demonstrate that telegraphy – the pre-eminent telecommunications medium of the time – functions in *The Ambassadors* and *The Golden Bowl* as a foil to a more expansive (more vibratory) understanding of medium as *milieu*, as life’s general condition. James’s thinking about technology is technical: it shapes the dialectic of plot and impression, incident and character, which in turn shapes the novel. Ruth Abbott starts, as it were, from the opposite end of the spectrum: from the emergence of cinema as a mass medium. The films D.W. Griffith made for the Biograph Company between 1908 and 1913 are usually taken to represent the subordination of devices hitherto displayed as attractions in their own right to the demands of narrative continuity. Abbott argues that the innovative patterns of their editing were in fact ‘written into’ them by the rhythms of the lines of poetry Griffith loved to read and recite, some of which he took the trouble to incorporate into decisive and resonant intertitles.

The need for theories of technology and media has of course been exacerbated by the establishment of the digital computer or network of computers as the ultimate universal machine. It seemed right, therefore, to include two essays which directly address the latest turns taken in the long story of prosthesis. Esther Leslie analyses the rise of the touch screen – in white goods, in the pocket, in the office – as an interface at once permeable and impermeable. The touch screen solicits our swipes, caresses, gestures, yet it remains a hard, glassy barrier. At once a history and a phenomenology, Leslie’s account nonetheless returns again and again to the question of writing. The touch screen, she argues, has its own rhetoric. Julian Murphet addresses the ways in which we are all throughout our lifespan in the process of being written genetically. Beginning with the figural play of Shakespeare’s *Sonnets*, Murphet goes on to explore two recent works which imagine what it would be like to write in DNA: Richard Powers’s novel *Orpheo*, in which a retired composer attempts to use bacterial DNA as data storage; and Christian Bök’s xenotext experiments, in which a one-line poem is subject to the processes of coding, recoding, transcoding, and decoding DNA in the living matter of a unicellular bacterium.

We are, in all of the essays collected here, in the domain of the device: the mechanism-conceit which articulates will, fancy, and desire. Each essay approaches that domain from an angle of its own. But one way to characterize the domain itself would be to adopt and develop the term which names the series of which this book is the first: technography. The domain of the device is that which consists of, and gives rise to, technography. The term attempts to recuperate some of the strangeness that has been lost in the course of the long naturalization of the idea of ‘technology’. Originally a genre of writing – a treatise on a practical art or craft – ‘technology’ came to denote the material end product of such arts and crafts. Its eventual primary association was with

industrial machinery or equipment. Today, we think that a ‘technology’ is a machine, a system, a piece of kit. What began as a term for a discourse or a way of thinking has ended up as a term for an object or a set of objects. By contrast, ‘technography’ came into use during – and possibly in reaction to – the late-nineteenth-century turn from words to things. A technography is a description of technologies and their application with primary regard to social and cultural context. Technography, itself technologically mediated, like all forms of writing, is a reflection upon the varying degrees to which all technologies have in some fashion been written into being. It examines the crucial role writing has played, not just in the description of technological objects and their functions, but in the inscription of technologies within social and cultural life. Technographies describe the history and theory of those transformative occasions on which writing confronts its own enabling opposite internally. Technographies attend equally to the rhetoric sedimented in machines, to machines behaving rhetorically, to rhetoric that behaves mechanically, and to rhetoric behaving in pointed opposition to mechanism. In the essay which opens this volume, Steven Connor takes on the role of technographer in order to argue that all literature is technographic in so far as it engineers in writing the particular kind of engine of writing it aims to be. He sets our scene, too, in proposing that modern literature is modern by virtue of its will, fancy, or desire to become ever more technographic.

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6

Enigma Variations: Mallarmé, Joyce, and the Aesthetics of Encryption

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On or about June 2013 human character changed. Democratic governance suddenly became a lot harder to believe in, as Western leaders more or less admitted that the privacy of their citizens was less important than maintaining national security. Calls for greater transparency went unheeded; freedoms that had once been taken for granted began to seem ephemeral; and concerns about technological intrusiveness proliferated. Such, at any rate, was the form taken three years ago by the media response to the revelations of Edward Snowden, a private intelligence contractor who handed over to the world's media thousands of classified documents detailing global surveillance programmes. These documents revealed that the National Security Agency and the so-called Five Eyes – an intelligence alliance comprising Canada, the UK, Australia, and New Zealand, as well as the US – had been running such programmes for years, principally by monitoring telephone, email, and internet use, with little regard for the law.

A flood of dire warnings ensued, predicting the 'end of privacy' and the ubiquity of sinister panoptical technology; the future, heretofore, would be one of compulsory, enforced openness (Knigge 2013; Pierce 2013; Weinberger 2014). In the wider arc of cultural history, however, Snowden's revelations seemed almost like business as usual. Throughout the last century, the right to privacy has more often than not yielded to the pressures of public relations and publicity, as well as more covert practices of state and military surveillance. In fact, these deep-rooted developments have refigured our understanding of the Victorian era. Far from being a period of probity and rectitude, as was once believed, the second half of the nineteenth century now appears to us as the last great Age of Secrecy. Deception, concealment, discretion, and doubling: these storytelling devices all helped to make that Age so compelling, at least in terms of its literary products. Hence the profusion of late-Victorian novels and plays that involve blackmail, often featuring tell-tale documents (the incriminating letter, the elusive property deed); bigamy and hidden or uncertain patrimony; and forbidden desire (whether as sexual impropriety

or its decadent twin, sexual transgression). If Charles Dickens presided over this Age, as the unrivalled master of psychological and narrative concealment, then his foil was Oscar Wilde, the arch-poet of secrecy and self-display.

The modernist turn, as we know, involved a complex renegotiation of Victorian precepts and poetics. This shift is particularly critical when it comes to secrecy, because it is marked by an *involution* – not so much a rejection of hidden machinations or an embrace of openness as a turning inwards. Secrets still abide, in the early decades of the twentieth century, but they are no longer seen as primarily social, inter-personal matters. Instead, they are translated into textual concerns, centred around questions of method and technique. My focus in this essay, then, is technographic secrecy – which is to say, the modernist interest in secret languages, in cryptic writing, and in codes and ciphers. By examining this interest, I suggest, we can engage with modernism's difficulty and obliquity, and further our understanding of its hermeneutical ambitions.

The coded word has a long and, as it happens, bloody history – at least by association. Encrypted messages have played a crucial role in the history of warfare, for as long as there have been records of such events. Indeed, if it were not for secret communications, strategies for moving large masses of men into pre-designated positions without enemy awareness would simply not be possible. The Roman historian Suetonius describes how Julius Caesar 'would write in code, changing the order of the letters of the alphabet, so that not a word could be made out' (Suetonius 2000: 28) – an indispensable method for conveying messages to his generals stationed at the war front. The 'manner' in question is now known as the 'Caesar shift', a substitution cipher in which each letter is replaced by another letter further down the alphabet. Poly-alphabetic techniques grew from this – i.e., substitutions that changed alphabets with each letter – first by hand and then, in the twentieth century, more rapidly thanks to what has been called the 'mechanization of secrecy': electro-mechanical, rotor-driven devices that first scramble text and then transmit it using Morse code signals. The best known of these devices is the Enigma enciphering machine, invented by the German engineer Arthur Scherbius in 1918 and used extensively by the Nazi military throughout the Second World War. The fate of the war, as counter-factualist historians like to tell us, hinged on the code-breakers at Bletchley Park. With the help of the 'bombe' deciphering machine (originally designed by Alan Turing) the daily settings of the Enigma machines on the German military network could be established, and the messages intercepted and decoded.

The science that has emerged between these two events, the development of the Caesar shift and the appearance of the Enigma machine, has also expanded accordingly, keeping pace with advancements of the technology. As an instrument for analysing hidden or secret writing, the science of cryptology has two arms: cryptography, the art of making codes and cipher systems; and cryptanalysis, the study of how secret writing can be translated or interpreted.

To read these practices in the context of literary modernism, as I propose to do, is to come up against the perennial problems of difficulty, obscurantism, and unreadability. To put this another way: because it is the art of allusion *par excellence*, modernist writing is determinedly cryptic, even when it is not overtly cryptographic. We need look no further than its anti-revelatory narratives to find signal examples of this tendency – whether it be the dying words of a charismatic but corrupted man, adverting to some unspeakable, inexpressible horror; the enigmatic relationship between a shell-shocked, or perhaps rather schizophrenic, First World War veteran and a politician's wife who is wont to throw extravagant parties; or a tale of adultery, death, and madness recounted by a cuckolded narrator whose limited knowledge and understanding of events make him barely capable of narrating in the first place.

Why were literary modernists compelled to use these modes of evasiveness and unfathomability? Leonard Diepeveen, in *The Difficulties of Modernism* (2003), gives two possible answers. The first, now more or less discredited, is that it was an exclusionary tactic, an imperious gesture to keep understanding in the hands of the privileged few. The counter-argument, which still has some purchase today, is no less high-minded: modernist textual opacity bespeaks the desire to move beyond language, beyond rationality, even beyond form (Diepeveen 2003: 126-35). Though versions of this argument are still in circulation, it has a quasi-mystical character that makes it difficult to see modernist texts as linguistic constructs. I want to suggest, by contrast, something much more straightforward and pragmatic. The coding and encipherment undertaken by some literary works do not just provide the pleasures of puzzle-solving, which can more readily be obtained from non-literary sources; they also yield significant aesthetic returns, in the economy of meaning. There is, in other words, an *aesthetics of encryption* that can be gleaned from modernism's poetics of elusiveness.

Such an aesthetics, I suggest, is founded on a two-sided promise – the promise of a key, and the withholding of a solution. Think of the notes appended to *The Waste Land*, which promise to unlock the mysteries of Eliot's recondite poem but, of course, do nothing of the sort; as Louis Menand notes, the rationale of Eliot's interpretive method means that they become 'simply another riddle [...] to be solved' (Menand 2007: 89). Nevertheless, their supplementary existence affects how the work is read, prompting the hope that its radical discontinuities might *themselves* contain a logic of coherence and (hence) a secret aesthetic schema.

In his magisterial study of *The Cryptographic Imagination*, Shawn Rosenheim describes how such hopes are inculcated. As well as texts that explicitly include ciphers or codes, Rosenheim brings to our attention

a constellation of literary techniques concerning secrecy in writing. These include private ciphers, acrostics, allusions, hidden signatures, chiasmal framing, etymological reference,

and plagiarism; purloined writing and disappearing inks; and the thematic consequences – anonymity, doubling, identification, and the like – that follow from cryptographic texts. (Rosenheim 1997: 2)

Rosenheim is suggesting that cryptographic techniques can be seen as a part of wider literary-critical procedures; extrapolating from this, we might conclude that they also have aesthetic uses.

However, there is one critical practice that raises questions. Cryptography has a relationship with the theory of textuality that is problematic, or at the very least uncertain. To attend to textuality is to acknowledge that a literary work has a future, as well as the past and present inscribed in it at the time of its birth. It is the recognition that its meanings do not stop with the author or with its contemporary context, but will continue to be produced across time, as its circumstances change. By contrast, to read a text cryptanalytically, so to speak – to discern a clear-cut pattern or a systematic manipulation of literary codes – is to disclose an act of deliberation, to see up close the powers of authorial agency. Cryptographic clues in a modernist text mean that *unreadability* is displaced by *self-readability*, in which the cipher, or structuring algorithm, works as a kind of paratext – albeit one that is embedded in the work itself. Consequently, a cryptanalyst, or a cryptanalytical critic, cannot resort to the textual unconscious as support for his or her interpretive propositions.

I will address this clash between cryptographic and textualist readings further on. At this point, I want to suggest that the cryptic and the cryptographic meet most distinctively – on equal terms, as it were – in the novels of James Joyce. These works provide compelling aesthetic and heuristic justifications for the practice of ‘secret writing’ – as a method, a technique, a technography. To set the scene for Joyce, let us look back to the mid-to-late nineteenth century, and the literary genesis of cryptography.

Poe / Mallarmé: The Number of the Stars

Rosenheim locates the foundations of the cryptographic imagination in the detective story – which means, effectively, Edgar Allan Poe’s Auguste Dupin tales, the works that gave birth to the genre. Poe himself was an enthusiast of cryptographic puzzles; in fact, he coined the term ‘cryptograph’, and even produced a kind of mini-treatise on ‘secret writing’. Part history, part how-to guide, it contains this astute observation:

The reader should bear in mind that the basis of the whole art of solution [i.e., decryption], as far as regards these matters, is found in the general principles of the formation of language itself,

and thus is altogether independent of the particular laws which govern any cipher, or the construction of its key. (Poe 1841: 34)

Even a secret language must adhere to wider rules that govern all languages – rules concerning regularity, consistency, and necessary repetitions – in order to be intelligible. This means, in turn, that the cipher text bears a relationship to its original or plain text that goes beyond simply the algorithm used for the encryption process.

It is elucidations such as these that endeared Poe to the French Symbolist poets, also concerned with the ‘formation of language itself’ and with how its general principles might be reconceived. Charles Baudelaire was, of course, Poe’s great French champion, but he was followed closely in this by Stéphane Mallarmé, Baudelaire’s admirer and one-time disciple. As well as translating several of Poe’s texts into French, including *The Raven*, Mallarmé composed (at the invitation of A.C. Swinburne) an elegy to mark the twenty-fifth anniversary of Poe’s death. Entitled ‘Le Tombeau d’Edgar Poe’, it has been read as nothing less than a declaration of Symbolist principles (Wilson 19): ‘Donner un sens plus pur aux mots de la tribu’ (‘[To bestow] purer sense on the phrases of the crowd’ [Mallarmé 2006: 70-1]).

It is with Mallarmé that the rarefied sub-category of ‘cryptographic modernism’ comes into being. To approach the poet through French theory, however, is to confront a very different kind of progenitor. For Maurice Blanchot, writing in the 1940s, Mallarmé is first a destroyer and then a creator: the thinker (and poet) who grasped the absence and silence at the heart of language, and saw it as literature’s negative capability, its radically unfixable condition (Blanchot 1995: 27-42). Similar analyses are undertaken throughout the 1960s, in the pages of *Tel Quel*, by Gérard Genette, Philippe Sollers, and Pierre Rottenberg, for whom Mallarmé is *the* exemplar of literary modernity. That enterprise culminates with the publication of Jacques Derrida’s ‘La Double séance’ in 1970. Derrida’s Mallarmé disturbs the mimetic hierarchies that Plato sets up so carefully in *Ion* and *The Republic*, making the distinction between *imitator* and *imitated* inoperable. Referring only to its own articulation, the poet’s writing is both inside and out, both ideal image and material object (Derrida 1970a: 18-23; 1981: 198-206).

In the 1990s, Mallarmé remains in the vanguard of French theoretical discourse. Alain Badiou gives him pride of place in his Age of Poets – a sequence that runs from Hölderlin to Celan – in which poetry takes over the functions of philosophy. Mallarmé represents for Badiou the fulfillment of this annexation, by showing how the poem can be not just a mode of saying but also a form of thinking (Badiou 2014: 5). And Jacques Rancière seeks to rescue Mallarmé from the shadows of ‘obscurity’, by which he means secrecy, hermeticism, ineffability. Far from being an ‘ivory tower’ aesthete, says Rancière, Mallarmé was worldly and community-minded, and fully attuned to art’s place in the social and political economy (Rancière 2011:

xv-xvi). None of these writers sees Mallarmé's work as particularly rarefied or coded, nor as rife with private associations and esoteric symbols that need to be deciphered. Blanchot implicitly repudiates such views in an early piece entitled 'Is Mallarmé's Poetry Obscure?' (The short answer: 'no' [Blanchot 2001: 110].) And Rancière states outright that 'Mallarmé is not a hermetic author; he is a difficult author' (Rancière 2011: xiv).

The most recent addition to this canon – a 'fourth generation', as it were – is Quentin Meillassoux's 2011 study, *Le Nombre et la sirène*. The subtitle of this work is *Un déchiffrement du Coup de dés de Mallarmé* – 'un déchiffrement' being a decipherment or decoding. Meillassoux only engages superficially with the line of descent I have just cited, briefly (but firmly) taking issue with Blanchot and Rancière. Instead, he draws on a different French critical tradition – that of Mitsou Ronat and Jacques Roubaud, who restrict themselves to a small part of the poem. In the wake of a shipwreck, a hand clutches two dice, and is on the verge of rolling them:

	au poing qui l'étreindrait
comme on menace	un destin les vents
l'unique Nombre qui ne peut pas	être un autre
	in the fist that seeks to grasp it
as you threaten	some destiny and also the winds
the one and only Number that cannot	be any other[.]
(Mallarmé 2006: 166-7)	

For Ronat and Roubaud, the 'one and only Number' both structures and co-ordinates Mallarmé's poem, and it is twelve: the alexandrine poetic metre, comprising twelve syllables; the twelve double-pages of the text, in twelve-point type; and the thirty six lines – three multiples of twelve – that make up each page (Meillassoux 2012: 26-7).

Meillassoux argues that Mallarmé himself refutes the 'twelve' hypothesis on the *Un Coup de dés* manuscript, in his instructions for printing the poem. Meillassoux's study is, then, a strange kind of hybrid – at once sensitive to the evidential nuances of 'secret writing', yet establishing many of its claims through the methods of critical theory: puns and etymologies, counterintuitive rationales, and sly metonymical shifts. For Meillassoux, the 'one and only Number' of the poem is seven. He finds support for this in other Mallarmé works; and in cosmology. Because the poet regarded the night sky as a celestial symbol of chance, Meillassoux argues that the Little Bear constellation – which contains the pole star – is significant; and the Little Bear contains seven stars. The momentous last line of the poem – 'Toute Pensée émet un Coup de Dés' ('Every thought emits a throw of dice') – consists of seven words. And the

number *sept* is an anagram for Mallarmé's first name – or at least the first four letters (45-51). Meillassoux eventually arrives at the 'unique number' of 707 – the total number of words in *Un Coup de dés* (68-79). The pieces of 'evidence' that he cites to reach this point are not equally robust, but he is at least aware that the encrypted number cannot be treated as an end in itself:

it is true that a code, in itself, is basically something rather puerile, whatever its complexity; something devoid of literary value, in any case. [...] To introduce such games into such a beautiful work, with such weighty stakes: How could Mallarmé have done this to us? (10-11)

As far as Meillassoux is concerned, the real question, or questions, are: 'Why encrypt the *Coup de dés* [and] why encrypt it in *this way*?' (11). These questions get to the heart of cryptographic modernism, and to its aesthetical underpinnings. Keeping in mind both Mallarmé's technical virtuosity and Meillassoux's line of enquiry, I will now move on to Joyce.

Joyce's Enigmatics: Reading for the Secret

Mallarmé's talismanic number – at least as interpreted by Meillassoux – also strikes a chord with the Joyce of *Ulysses*. Just before Stephen embarks on a discussion about *Hamlet*, in the 'Scylla and Charybdis' episode, he is asked if he has found the 'six brave medicals' to whom he might dictate his work. Stephen replies: 'I feel you would need one more for *Hamlet*. Seven is dear to the mystic mind. The shining seven W.B. calls them.' (Joyce 1986: 151) Seven is, indeed, a luminous number in esoteric lore, as Joyce and Yeats were both aware. And in keeping with this belief, *Ulysses* is laden with 'shining seven[s]': the seventh gravedigger who sidles up to Bloom in 'Hades'; the gorgonzola sandwich that he purchases in 'Lestrygonians', costing seven pence; Robert Emmett's seven last words, recalled by Bloom in 'Sirens'; and the sudden appearance of Edward VII in 'Circe', precipitating the English soldier's attack on Stephen. Seen in this light, it is no coincidence that Molly and Leopold Bloom live at 7 Eccles Street.

But Joyce's interest in numerology is not the only thing that links him to Mallarmé. In the mid-1950s, David Hayman suggested that a 'Mallarmé code' was operating in *Finnegans Wake*. His key instance is on the novel's second page:

Where the Baddelaries partisans are still out to mathmaster Malachus Micgranés and the Verdons catapelting the camibalistics out of the Whoyteboyce of Hoodie Head. (Joyce 1975a: 4)

Debates about symbolist poetry are restaged as struggles between factions, followers of Baudelaire versus the ‘mathmaster’ Stéphane Mallarmé, with Verlaine’s followers struggling against the rest of the world. From this initial ‘key’, Hayman traces out the ‘double m’ insignia as a coded allusion to Mallarmé in play throughout the *Wake*: ‘Mohomadhawn Mike’, ‘Tomatoes malmalaid’, ‘Montmalency’, and the like. But Hayman’s cryptotextual analysis does not stop with these arch, semi-facetious examples. His far more contentious claim is that Joyce’s text is nothing less than a ‘recryption’ of *Un Coup de dés*, using the same universal symbols to depict the same truths, and then conveying them in the same way (Hayman 1956: 37). Hayman has amassed a welter of correspondences to support the claim, but what is perhaps most noteworthy about his approach is that he is on Joyce’s side. Over the years, similarly totalizing claims about the *Wake* have often ended in dismissal, as if the entire text were a monstrous cryptogram for which only the author possessed the key.

Rather than get lost in determining what that key, or those keys, might be, I will instead turn back to the more tractable *Ulysses*. Bloom himself is acquainted with at least one cryptographic technique. In the ‘Ithaca’ chapter, he enters the front room of his house, which contains a locked drawer. The punctilious narrator then reveals to us the (fairly considerable) contents of that drawer, including two pornographic postcards, two condoms, and some amorous correspondence from Martha Clifford. Alongside Martha’s three letters, Bloom keeps to hand

the transliterated name and address of the addresser of the 3
letters in reserved alphabetic boustrophedonic punctuated
quadrilinear cryptogram (vowels suppressed) N. IGS./WI.UU.
OX/W. OKS. MH/Y. IM. (Joyce 1986: 592)

The cryptogram is based on a bi-directional alphabet – A-Z mapped onto Z-A – which when decoded (vowels still suppressed) reads as follows: ‘M.RTH./DR.FFLC/D.LPH.NS/ B.RN’. Both cryptogram and decoded message, each taking four lines, are ‘quadrilinear’. This moment is set up thirteen chapters earlier, in ‘Calypso’ – the Homeric name for ‘the Concealer’. In that chapter, the Blooms keep textual secrets from each other: Molly receives a letter from her impresario Blazes Boylan, and Leopold prepares to collect a fourth amorous letter from Martha Clifford. The cryptogram in ‘Ithaca’ is thus emblematic of Bloom’s penchant for schemes and secrecy, and makes perfect sense in the context of his role as a ‘concealer’.

A more consequential form of secrecy is alluded to in the ‘Sycylla and Charybdis’ chapter, set in the National Library, via an instance of what could be termed meta-cryptography. The authorship of Shakespeare’s plays is put in question by John Eglinton, who invokes the theory that they are really the work of Francis Bacon. The need for secrecy here might have been political

or it might have been religious; in either case, encryption was needed. And the best way to prove it, as Ignatius Donnelly tried to do, was by locating a cipher in Bacon's writing and then applying it to the First Folio (Donnelly 1887); phrases or letters indicating Bacon's authorship would then be revealed. For Stephen's narrating consciousness this is more like popular entertainment than serious scholarship: 'Cypherjugglers going the highroads. Seekers on the great quest. What town, good masters?' (160).

These examples are fairly overt cryptographic details or flourishes. In terms of the book's architecture, exhibit A is the table of times, organs, arts, and technics that Joyce gave to his friend Carlo Linati as, in his words, 'a sort of summary – key – skeleton – scheme (for home use only)' (Joyce 1975b: 271). The Linati schema, like the 'notes' to *The Waste Land*, does indeed hold out the promise of a key, and like the 'notes' it does not actually explain or solve any of the work's deeper mysteries. There is, however, a much bigger promise made to the reader, before she has even opened the book. The Homeric parallel, we might say, is a kind of cipher, an algorithm for understanding, amongst other occurrences, the cryptic relationship between Stephen and Bloom.

The title, in fact, promises everything: a rewriting of Homer's epic account of wandering and return, a translation, and a translocation, from larger-than-life exploits in the Ancient Mediterranean to quotidian life in turn-of-the-century Ireland. But although the text only fulfils a small part of this promise, that did not prevent Eliot and Stuart Gilbert from aggrandizing the Homeric parallels, and the 'mythical method' that they ostensibly spawned. By contrast, a later generation of critics, writing during and after the Second World War, was more circumspect. Harry Levin, in his 1941 critical introduction to Joyce, downplayed the Homeric precedent, emphasizing instead the ways in which *Ulysses* parts company with *The Odyssey* (Levin 1941: 72). A decade later, Hugh Kenner went even further. Without actually blaming Joyce, he argued that the parallels with Homer have been followed too slavishly and too methodically, to the detriment of the field of Joyce studies (Kenner 1952: 92-100). And a few years after that, A. Walton Litz suggested that the 'trivial details of the Homeric correspondence' were important for Joyce's exploration of his materials, not as 'clues for future readers' (Litz 1961: 39).

Is Joyce to blame for this state of affairs? Or perhaps we should ask: what's in a title? Being restricted to a single one is contrary to the spirit of the book, and its polyphonic, heteroglossial energies. We might wonder, then, what the effect would be if Joyce had chosen a more neutral, less mythologically weighted title; a title such as, say, *Bloom*. (This is not entirely fanciful because, as we know, the *Portrait* was translated into French and Italian under the title *Dedalus*, and the most recent, 2003 film adaptation of *Ulysses* was re-titled *Bloom*.) Though this would be unfair to Stephen and Molly, and to their narrating consciousnesses, how would it affect the way we read the novel

– would the Homeric parallels stabilize, recede, or disappear from the text altogether?

Mallarmé objected to the weight of significance granted a title, and its power to (over)determine meaning. '[W]e must forget the title,' he said, 'for it is too resounding' (Mallarmé 1956: 33). But if the book-title *Ulysses* is a cipher, as I am suggesting, then it is readily exchangeable for other literary precursors. Consider, for example, that in 1907, when Joyce was planning to conclude *Dubliners* with a story entitled 'Ulysses in Dublin,' he was also looking ahead to his modern anti-epic. His model for that work-to-come was, however, not Homer but Goethe. In a letter to his brother Stanislaus, Joyce declared that his novel 'would depict an Irish Faust, heroic and full of presumption' (Hayman 1982: 67). If this sounds a lot like 'Stephen Hero,' we should note that even in his later, actual incarnation, as Bloom's spiritual son, Stephen possesses an unmistakably Faustian temper. Hayman notes the absorption of abstruse lore, the elevation of spirit over flesh, the acute disillusionment, and Stephen's general unworldliness and asceticism (69). Additionally, we might note that his boisterous and underhanded house-mate – or rather, tower-mate – Buck Mulligan is, as Richard Ellmann points out, more than a little Mephistophelean (Ellmann 1977: 20-21). Ellmann also notes the 'parallel nocturnal settings' of Bella Cohen's brothel in 'Circe' and the Brocken in *Faust*, a place of German legend haunted by witches and devils (20).

In naming his novel *Ulysses* Joyce is, of course, risking bathos, with the implied juxtaposition of mythical hero and modern anti-hero. But this is not all that is going on here. The author of *Ulysses* is asking us to bridge the gap imaginatively, to consider how the two might be brought into alignment, and, having done so, to see that the outcome is not a perfectly analogical relationship, a sustained and unwavering parallel. Rather, it is as if making this leap between extremes opens us up to the book's *other* intertextual affiliations, and to the panoply of alternative titles that might correspond to those affiliations: *Faust*, *Peer Gynt*, *Hamlet*, *The Divine Comedy*, *Bowvard et Pécuchet*, *Sweets of Sin*, and on and on. A cipher, for Joyce, is not just a cipher, a process of conversion; it is also an engine for expansion, for multiplying possibilities rather than narrowing them.

For my final example of Joycean encryption, let us go back for a moment to Meillassoux. I noted earlier that the subtitle of his book, *Un déchiffrement du Coup de dés*, roughly means a 'decryption' or 'decipherment' of the poem, as the English translation has it. Meillassoux himself points out that, strictly speaking, a decipherment would be *un déchiffrement*, whilst *un déchiffrement* can also connote a 'sight-reading', in the sense in which a musician sight-reads a score, without rehearsal (Meillassoux 2012: 68). At the same time, the very notion of 'reading a score', through sight or through practice, is a kind of decoding. We are by now all too familiar with the notion of zeroes and ones, the binary code of the digital age. But just as rigorous and exacting is this other form of

‘encipherment’: the staves, notes, and intervals of the musical code, a ‘secret language’ known only to trained musicians.

Bearing this in mind, let us consider the ‘Sirens’ chapter of *Ulysses*. Much has been written about the ways in which Joyce attempts to translate musical forms into literary forms, to create an eight-part fugue out of words alone. Only one person, however, has actually attempted a bar-by-bar notation that explains how he did this. In the late 1980s Margaret Rogers, a musician and composer, transposed the chapter’s sixty opening fragments or motifs into music, using some pre-determined principles. The letters of the alphabet from A to G are treated as musical notes. So the chapter’s first line, ‘**Bronze by gold heard the hoofirons steelyringing**’, could be translated as: b-e-b-g-d-e-a-d-e-f-e-e-g-g. In addition, wherever the suffix *-ing* appears, it is interpreted as ‘in g’, as in, in the key of g. Finally, lower-case letters are in the key of the music, and upper-case letters indicate accidentals, i.e., sharps or flats (Rogers 1999: 264-6).

Rogers has produced the kind of hyper-technical analysis that only a professional musician or composer could come up with. But therein, I think, lies the problem. In its earnest literal-mindedness, this analysis is a misconstrual of what Joyce is doing in ‘Sirens’ – which is not dissimilar to what Mallarmé wanted to do with poetry. For Paul Valéry, Symbolist poetry meant one thing: poets ‘taking back from Music what properly belonged to them’ (Austin 1959: 19). Instrumental music could only produce vague meanings and emotive responses, and adding lyrics to it, as in opera, was no solution, because it merely juxtaposed two parallel forms, libretto and score. Poetry, on the other hand – Mallarmé’s *poésie pure* – sought to unite suggestion and evocation with clarity and intelligibility. Such a union, in the poet’s estimation, if achieved, would be inherently superior to music. At the same time, what counted as ‘poetry’ wasn’t just metrical writing. Mallarmé praised Villiers de l’Isle Adam for elevating prose to the heights of music. Ezra Pound held a similar, albeit less proprietorial, view to Valéry, asserting that ‘poetry begins to atrophy when it gets too far from music’ (Pound 1934: 14).

In Joyce’s ‘Sirens’ literature and music are united, it is true. But those mysterious opening fragments, the ‘overture’ to the chapter, are not all from the English language; they are renditions of street and other sounds, imposing, even overwhelming, in their sonorous materiality. Ingenious as Rogers’s decoding – or recoding – is, it amounts to a kind of kind of domestication, even a desecration, in its undercutting of the obdurate strangeness of the passage. As Alan Shockley notes, Rogers’s fugal (re)compositions ‘seem to have very little to do with Joyce’s text, and raise more questions than answers’ (Shockley 2009: 60) – the chief question being whether such an explicit and overdetermined code accords with the spirit of the text or contravenes it.

In one of the very few discussions of Joyce and cryptology, Hugh Staples avers that the ‘art of James Joyce is both arcane and radiant’ (Staples 1965: 167). The truth in this statement, I think, is the ‘and’, which makes the two

terms co-dependent: Joyce's writing conceals *as* it shines forth. Sam Slote makes a similar observation about the *Wake*. He considers Joyce's writing to be compulsively indeterminate, describing it as 'the writing which encrypts as it proceeds [and which] hides as it comes' (Slote 1998: 115). And Meillassoux sees *Un Coup de dés* in related terms: 'The text will not be completely illuminated once its cipher is elucidated, but will obscure itself otherwise, cloaking itself in unsuspected shadows' (Meillassoux 2012: 11).

Modernism initiated a new regime of secrecy, as I noted at the start. But what underlies modernist writing at its most difficult, oblique, and uncompromising is not just the notion that literature itself can be a form of secrecy, but that occlusion and revelation go hand in hand, that they are more tightly bonded to each other here than in any literary epoch before or since. It is Meillassoux's 'unsuspected shadows' that are, finally, what cryptographic modernism is really about. And it is the encrypted text – as well as, alongside of – the more straightforwardly *cryptic* text, that gives modernist secrecy its resilience.

The fundamental deficiency of the German military Enigma machine was that it could encrypt no letter as itself; it was this flaw that enabled Turing and his team to crack the code. Yet this is the real strength and power of literary modernism: its enigma machines do not simply occlude or hide or disguise, so that they can be decoded. Their encipherments evolve and mutate, propagating meaning and proffering semantic richness, yielding textual artefacts that can never be fully decrypted or exhaustively elucidated.

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