12. Richard Noakes (University of Cambridge): Representing 'A Century of Inventions': Nineteenth-Century Technology and Victorian *Punch*[*]

Introduction

On 6 February 1858 the leading Victorian comic periodical, *Punch; Or, the London Charivari*, published a short article entitled 'The Newest Nouveauté de Paris'. It reported seeing 'a new Crinoline petticoat, which is called *La Crinoline de Leviathan*' and which was 'so denominated from the extraordinary number of slips' which it boasted. 'The most curious part of the structure' was that 'the more slips it numbers, the greater the difficulty the Crinoline has in making way', and that owing to its enormous size 'there is great doubt [...] how the Crinoline can be launched'. What starts like an item of news about fashion turns out to be a spoof report in which *Punch* cleverly blended commentaries on two subjects that had already inspired many droll articles in the periodical: the ghastly size and unwieldy nature of crinoline dresses, and the protracted launch of the gigantic steam-ship, the *Leviathan*. Despite several major engineering 'slips', this mammoth engineering task had finally been completed a week before *Punch*'s spoof.[i]

Like so many articles in *Punch*, 'The Newest Nouveauté de Paris' bears a title that gives little away and yet contains valuable insights into the significance of particular technologies and technological metaphors in Victorian culture. Despite their apparent irrelevancy to technological matters, it is articles such as this that arguably furnish some of the most startling

evidence of the interpenetration of technical and non-technical discourses, and the embeddedness of technological metaphors in Victorian culture. Accordingly, this chapter illustrates the importance of an inclusive reading of all *Punch* material, from an overtly 'technological' article such as a full-page cartoon of the Atlantic telegraph, to such subtler representations of engineering as the 'Newest Nouveauté de Paris'.

Punch has been called the 'first and incomparably the greatest of the Victorian humorous journals' which exerted 'much influence on middle-class opinion' and remains a favourite primary source for Victorianists.[ii] It was not an immediate commercial success on its launch in 1841, but within a few years this 3*d* weekly had established itself as one of the most widely read and admired comic journals of the day. By the 1860s, it was enjoying weekly sales of an estimated 40,000 which was considerably greater than that of its rivals in the fierce nineteenth-century market for comic periodicals.[iii] Historians of *Punch* have shown that the periodical's success owed much to its combination of respectable humour and social conscience, a combination that contemporary commentators believed distinguished it from its scurrilous early nineteenth-century ancestors.[iv] Mark Lemon, who edited *Punch* from 1841–70, believed that one of the ways of achieving this respectable brand of humour was by 'keeping to the gentlemanly view of things', a remark highlighting the predominantly male and middle-class readership to which *Punch* contributors targeted their texts and illustrations.[v] With such admired writers as Douglas Jerrold and William Makepeace Thackeray and artists John Leech and Richard Doyle, Lemon played a key role in establishing, by the mid-1850s, the more genteel tone of the periodical, a transformation that

successfully responded to shifts in national circumstances—from the 'hungry' and socially turbulent 1840s to the economically prosperous and socially more harmonious 1850s—and the changing expectations of middle-class reading audiences.[vi]

Historians have provided ample evidence to show that despite its satirical perspective on the week's news, *Punch* remains a uniquely wide-ranging gauge of what one avid reader of the periodical called the 'changing costumes, customs, fads, fears, follies' of the period.[vii] Richard Altick's recent *Punch: The Lively Youth of a British Institution, 1841–51*, for example, demonstrates how many Victorian observers recognised the uncanny skill with which *Punch* captured the details of the contemporary landscape. There now exists a large and growing literature that uses this material to document Victorian attitudes to such key issues as religion, science, race, the Irish, and social customs.[viii] Scholars have long recognised the importance of technology, invention, and engineering in Victorian *Punch*, a periodical whose appreciation of the cultural significance of technology is illustrated by its 1866 observation that the nineteenth century is 'A Century of Inventions'.[ix] Most studies of *Punch* and technology, however, tend to concentrate on the more straightforward material on invention and engineering and thus overlook the uses to which *Punch* put technological metaphors and allusions in the putatively unpromising location of non-technological articles.[x] Altick's *Punch* is the exception here and points the way forward for a sophisticated reading of *Punch* and technology—one that gives properly contextualist analysis of technological material and understands the two-way traffic between technological and non-technological discourses.[xi]

This chapter builds on Altick's approach. It analyses the periodical's representations of and attitudes towards technology, broadly defined, between 1841 and 1861. This timescale allows new insights into the ways in which the periodical changed between two monumental periods in the history of nineteenth-century British technology—from the railway boom of the early 1840s to the laying of the first Atlantic telegraph cables in the late 1850s. Moreover, unlike previous accounts of *Punch*, this chapter attempts to classify the various types of technological humour in the periodical and to suggest ways of developing a more sophisticated analyses of the ways in which *Punch* used technological subjects for comic and critical commentary on both technological and non-technological topics of the day. Scholars agree that the popularity of *Punch* owed much to the ability of its writers and artists to make references in their articles which readers would have been able to comprehend. Technological references were no exception, and by tracing *Punch*'s use of technological allusions and metaphors in a wide range of topics and genres in the periodical, this chapter illustrates how much an inclusive reading of a periodical reveals the embeddedness of particular types of technology in everyday life but also supports Asa Briggs's acute observation that 'whatever the reason, invention was seldom universally acclaimed in Victorian Britain'.[xii]

Railways and Telegraphs: Optimism and Pessimism

Like so many topics, technology became the target of commentary in the *Punch* for many reasons. Driven by the comic journalistic goals of producing texts and illustrations that were topical, amusing, critical and

altogether captivating, *Punch* contributors were particularly attracted to those technological events and issues with which readers would have been familiar and interested, and which were therefore ripe for satirical reflection, sober appraisal, and news re-presentation. Accordingly, inventions and engineering accomplishments that became the subject of recent discussion and sensational display in daily newspapers, exhibition halls, pleasure gardens, learned societies, Parliamentary proceedings, and society gossip were seized on by *Punch* contributors as rich sources of material for its highly idiosyncratic editorialising on the week's events. While the journalistic preoccupations of *Punch* contributors explains the extensive coverage of such newsworthy technological issues as railway safety and telegraphic communication, the liberal bohemian outlook shared by *Punch* men illuminates the reasons why they chose to re-present technological events that revealed fundamental human virtues and vices, from ingenuity and heroism to obscurantism and fraudulence.

The deftness with which *Punch* contributors tracked the week's news means that the periodical bore witness to the rapid technological changes in the mid-Victorian period. Accordingly, there were far more articles on or alluding to steam-locomotives, railway accidents, and railroad speculation in the 1840s than in later decades when railways had become integral parts of the lives of *Punch* readers and thus no longer the technological novelties that made exciting copy. Likewise, the 1850s witnessed a concentration of material on the spate of new electric telegraphs laid in that decade although by the 1860s, notwithstanding the brief flurries of interest in the 1865 and 1866 Atlantic telegraph cables, the overall declining amount of material on

electric telegraphs suggests that they too were no longer seen as the newsworthy and effective sources of comedy and criticism as they had been. Similarly, while the new techniques of photography were frequent topics of satire in the 1840s, they occupied far less periodical space by the late 1850s when one was more likely to find articles on the typical post-Crimean technological subjects of heavy artillery and other new military weapons. While the technological focus of the periodical changed with contemporary events, the wit, ingenuity and overall tone of the technological representations partook of the softening of tone which Lemon and his contributors had accomplished by the mid-1850s. A good illustration of this is provided by contrasting John Leech's hilarious and extravagant 1843 visual satire on William Henson's aerial steam carriage [FIGURE 1] with the same artist's more sober 1858 depiction of 'John Bull' and 'Brother Jonathan' being joined by the first Atlantic telegraph cable [FIGURE 2].

Given that the mid-Victorian period witnessed a massive expansion in Britain's railway and telegraphic networks the prominence of these topics in *Punch* is hardly surprising. During its first twenty years, *Punch* balanced its concerns about the perils of travelling on and investing in railways with an underlying enthusiasm for the possibilities of this form of transport. The railway boom of the 1840s provided ample opportunities for the periodical to warn against uncontrolled financial speculation in new railway schemes, and to attack those avaricious entrepreneurs who seemed to be profiting from a form of transport that was neither comfortable nor safe. *Punch* exploited a variety of literary and visual genres to portray and to question the dangerous speeds, fragile machinery, and financial pitfalls associated with the railways.[xiii]

For example, an 1847 parody of a scene from Shakespeare's *A Midsummer Night's Dream*, explained that the 'course of Railways did never run smooth' because they were 'difficult in curves' and 'stood upon Directors' whims'.[xiv] Elsewhere, *Punch* responded to the myriad new and apparently chimerical railway schemes with spoof news reports and descriptions of its own deliberately unprofitable alternatives. Throughout the 1840s readers were kept abreast of the progress of *Punch*'s own 'Kensington Railway' which was described as 'a road leading from a place nobody ever was, to a place nobody was ever going', and whose financial state was so dismal that by 1848 its owners were letting out its telegraph line for drying clothes.[xv] However, this pessimism was balanced by the explicit and sometimes implicit identification of railways with progress, its celebration of the accomplishments of Robert Stephenson and other railway pioneers in the face of adversity, and its boundless enthusiasm for new railway inventions. In cartoons and poems readers saw steam locomotives represented as literal and figural engines of British technological, social, and intellectual advancement, often in opposition to 'barbarian' foreigners, dogmatic clergymen, and others who appear to impede such developments while in spoof prospectuses, cartoons, and droll commentaries on novel locomotive designs, readers were also presented with such extravagant proposals as a new railroad from Britain to China via the Earth's core and using giant musical instruments to create locomotive warning signals.[xvi]

Punch's representations of the electric telegraph also reveal tensions between technological pessimism and optimism. On the one hand, it sustained a fascination with the 'lightning' speed of 'electro-galvanic

communication' and in the very first article referring to the electric telegraph, it considered the transmission speed to be so great that news could be 'received before it is written'.[xvii] On the other hand, it was acutely aware of the shortcomings that many of its readers would have encountered, from the lies apparently conveyed via what *Punch* christened the 'tell-a-cram' to the infuriatingly complex procedures of sending messages.[xviii] However, *Punch* was satisfied that the problems of the telegraph had more to do with human incompetence than any fundamental flaws in its principles of operation. In 1853, for example, it contrasted the slow and circuitous routes by which post was delivered to the expediency of telegraphic communication, pointing out that the 'law of the Electric Telegraph is a law of Nature which is unchangeable', while the 'law of the Post' is dependent on the whim of the Post Office.[xix] Indeed, *Punch*'s droll proposals and enthusiastic commentaries on the possible applications of telegraphy—including remote medical consultation and crime detection—underline its confidence that the laws of the telegraph, despite their troublesome manifestations, would eventually improve the physical and moral condition of humankind.[xx]

The troubled attempts to span the Atlantic with a telegraph cable prompted a similar mixture of pessimism and optimism. The breakage of the first Atlantic cable in August 1857 prompted a series of droll news commentaries, jokes, mock poetic laments, and a timely poem in which allegorical figures of steam and electricity exchange the boast that '"we help morality; / That means we make to overtake / Rebellion and rascality"', but then worry that '"with all our might, we haven't quite / Regenerated the nations"'.[xxi] The successful laying of the second Atlantic cable in August

1858, however, dissipated *Punch*'s doubts about the utopian promise of global telegraphy. Four days after the Old and New Worlds had been connected by telegraph, *Punch*'s reflections on this new international relationship inspired one of its rare decisions to make technology the subject of the week's celebrated 'large cut' (figure 2). It shows the allegorical figures of Britain and the United States—'JOHN BULL' and Brother 'JONATHAN'--pulling opposite ends of an Atlantic telegraph cable which sinks the ship of the ancient oceanic despot, Neptune. The cartoon expressed *Punch*'s growing confidence that this electrical amalgamation of Britain and the United States could foster the international kinship required for vanquishing tyranny.[xxii]

As far as *Punch* was concerned, the miracle of telegraphy was more than a match for supernatural beings of both the past and present. Roman Catholic miracles, not to mention Roman Catholicism *per se*, were notorious targets of *Punch* ridicule, so few readers would have been surprised in 1859 by the periodical's sceptical response to reports of the simultaneous liquefaction of Saint Januarius's blood in several Italian towns. What was new about this anti-Catholic piece was the technological focus. *Punch* explained how the feat could have been accomplished by the electric telegraph and contrasted the reliable 'miracles' of engineering and the false 'miracles' associated with religious sects: some Italian towns, it urged, were 'places where the steam-engine has never been inspected, and where the electric telegraphs are utterly undreamt of' and where 'their agencies might readily affect a so-thought "miracle", and deceive the eyesights blinded by the darkened superstitions which are the stock-in-trade and groundwork of the Romish Church'.[xxiii] Roman Catholics were not the only ones to be the targets

of *Punch*'s technological humour, and in its first two decades it produced a string of droll poems, spoof letters, and visual caricatures of ignorant rustics, women, and members of foreign races conveying their confusion and unfounded hostility towards new technology.[xxiv]

A Typology of Technological Humour

In the years leading up to the opening of that symbol of mid-Victorian prosperity and technological progress, the Great Exhibition of 1851, *Punch* also represented a plethora of other inventions which, like its portrayals of the railways and telegraphy, suggest tension between technological pessimism and optimism. While *Punch* could lament in 1849 that 'most new inventions, to go a very great way' seem 'completely to have been dropt' because nobody would 'carry' them, the enthusiasm with which the periodical greeted, explained, burlesqued, ridiculed, and speculated on technology testifies to an underlying admiration for, and confidence in, the products of inventors' and engineers' workshops.[xxv] To make sense of this rich material, it is important to survey not only what sorts of 'new inventions' caught the eyes of *Punch* contributors, but to attempt to classify the different types of article in which these and any other technologies feature. Since there are satisfactory surveys in Graves's and Altick's accounts of *Punch*, my emphasis is on the latter task.[xxvi]

Among the most common type of *Punch* article featuring technology is the droll commentary on new inventions or schemes advertised in newspapers, not least those technological developments that promised to improve domestic and working conditions. Articles on a 'pocket stove', 'self-

acting furniture', and 'fog glasses' explored the amusing effects of new invention on those favourite *Punch* subjects of manners and customs, and, less frequently, present humorous interpretations of the advertiser's typographical blunders or dubious assertions.[xxvii] One of *Punch*'s most revealing approaches to the relentless number of new contraptions was the seemingly serious article announcing a bogus invention. Exemplary here are an 1843 spoof on William Henson's aerial steam carriage—a luxury aerial courier suspended by the 'peculiarly light' issues of *Punch* and steered by 'gigantic peacock's feathers'—and an 'Agricultural Pocket Thermometer' for measuring the 'loyalty of the agricultural protectionist'.[xxviii] Just as *Punch* mocked the reductionist tendency of scientific 'progress' by devising its own sciences of subjects that were beyond such analysis, so these articles poked fun at the bewildering pace of technological 'progress' by puffing its own inventions for performing tasks that were clearly beyond technological solution. Like so much satire, *Punch*'s portrayal of bogus inventions achieved comic results by vastly exaggerating sizes or expectations. In spoof prospectuses for such schemes as the 'Vesuvius and Etna Extinction Company' for pumping water into volcanoes using a 'MONSTER STEAM-ENGINE', *Punch* parodied the mendacious style of advertisements to emphasise the often vast gulf between the actual and alleged capabilities of an invention.[xxix]

An important indicator of the cultural significance of particular types of technology is arguably the extent to which they inform metaphors or other aspects of non-technological discourses. This exercise is certainly instructive in the case of *Punch* which occasionally developed its commentaries on non-

technological issues by blending them with metaphors of and narratives about new bridges, cannons, automata, steam-powered looms, and other technologies that would have been familiar to most of its readers. Inventions such as the 'Agricultural Pocket Thermometer' illustrate how the *general* mid-Victorian culture of meters and scopes enriched *Punch*'s strategies for representing political and social issues, but more specific examples can be traced. In a March 1860 issue, for example, *Punch* used a technological and political double-entendre in the title of main woodcut and accompanying poem, 'The New Russell Six-Pounder'. This exploited readers' familiarity with the recently patented 'six-pounder' gun of William George Armstrong to represent the Foreign Secretary John Russell's new Parliamentary Reform Bill, an unsuccessful piece of legislation that proposed to reduce the franchise qualification for inhabitants of towns to £6. Nonetheless, it inspired *Punch* to cast Russell as a political gunner, aiming his 'long-range electoral' gun into a bay where the range of the gun/bill was to be measured by floating markers labeled with a range of values from '6 Pound Suffrage' to 'Universal Suffrage'.[xxx] [FIGURE 3 HERE]

More subtle and scathing, however, was *Punch*'s use of technological metaphors to expose the defects of government machinery. Two days after the Crimean War was officially declared over, *Punch* presented a song charting the life of 'a calico-weaver and spinner' called 'JOHN BULL', who took 'infinite pains' to maintain powerful 'spinning-machinery' which duly won praise from 'all Europe, including the Turk'. However, this representative figure of the English, proud of the international praise for his fine apparatus, suffers the humiliation of seeing his 'perfect machinery' break down in front of

his foreign visitors. He eventually traces the catastrophe to a stoker who had fallen asleep on duty, and hires another stoker who helps restore the machine to its 'famous pace'. The allegorical nature of the song, however, is quickly apparent from its moral: those who read the official report on the Crimean War will 'find why our war-machinery dear, / In the act of working go so out of gear [...] And in at the Horse-Guards' Engine-room peep, / Where sits LORD HARDINGE, fast asleep.' *Punch* thus joined in the widespread condemnation of Viscount Henry Hardinge, the recently demoted commander-in-chief of the British forces, for mismanaging, from his Whitehall 'Engine-room', the British army 'machine' that faced the Russians in the Crimea, and 'broke down' before its Turkish and European allies.[xxxi]

Patents and Inventors

Punch could be as subtle in representing its views on the politics of invention as on the politics of war. During the late 1840s and early 1850s it participated in nationwide campaigns to reform the patent laws that it clearly believed to be injurious to the English inventor. Its contributions varied from such droll one-liners as 'SOMETHING VERY PATENT—That some reform is strongly needed in the absurd laws that apply to patents', to a natural historical description of the bureaucratic 'Red-Tape Worm' of Whitehall which is 'determined in its attacks on all new inventions', and a Byronic parody charting the struggles of 'CHILDE JOHNSON [...] a venturous wight', who fights such bureaucratic monsters as the 'rapacious birds' of 'Ravens' Patent Nest', and finally wins 'A magic scroll—a talisman—a thing yclept a Patent'

with which he safeguards ‘a certain treasure’ given to him by ‘The Fairy, hight Invention’.[xxxii]

The periodical did not simply act as a passive observer, criticising the paltry rewards gained and struggles suffered by inventors, but actively called on its readers to amend what it felt to be injustices meted to the nation’s pioneers. The demise of Frederick Scott Archer, the ‘inventor of Collodion’, who had left his invention ‘unpatented, to enrich thousands’ and his family penniless, inspired *Punch* to back a campaign led by Queen Victoria for a subscription fund. Exploiting the ambiguity of photographic terms, it called on the many ‘sensitive’ photographers to leave a ‘deposit of silver’ so that ‘certain faces, now in the dark chamber, will light up wonderfully, with an effect never before equalled in photography’, and haughtily insisted that ‘Now, answers must not be Negatives’.[xxxiii]

Punch was not always so appreciative of inventors and engineers, and its representations of these figures are in many ways as ambivalent as its portrayals of technology. While the periodical could memorialise such engineers as Robert Stephenson as ‘hair-brained and enthusiastic’ individuals who proved the worth of their inventions in the face of derision, it could also turn these virtues into faults, caricaturing the inventor as the ‘mechanical genius’ whose eccentric contraptions disrupt the domestic setting of his pursuits, or as the witness who gives incomprehensibly technical evidence before official enquiries.[xxxiv] *Punch* itself was responsible for some of the derision that inventors suffered for their ‘hair-brained’ schemes. In most cases, *Punch* clearly saw itself as an arbitrator of invention that sought to protect the public from scams. Though largely forgotten now, some inventors

infuriated *Punch* so much that their names appeared in issues of the periodical as frequently as such esteemed figures as Robert Stephenson. A good example is the physician-inventor, David Boswell Reid whose ventilating apparatus for the new Palace of Westminster met with decided criticism from Parliamentarians and the press alike. Between 1845 and 1854 *Punch* contributors fuelled readers' scepticism of Reid's unpredictable and unsatisfactory invention in witty commentaries on news stories, spoof proposals for inventions, jokes, poems, cartoons, and a short play. *Punch* lambasted the invention for lacking an 'air of practicality' and being a 'regular ill that blows nobody good', and following news that Reid had been sacked by the politicians who had grown tired of the machine's scorching and icy blasts, lampooned him as the 'The Ventilating Guy Faux' whose attempts to deliver a 'fatal blow' to Parliament had been stopped in the nick of time.[xxxv]

Conclusion

This chapter has illustrated the benefits that an inclusive reading of a Victorian comic periodical can have for cultural histories of technology. The identification of technology and technological metaphors in *Punch* articles, irrespective of literary genre and length, not only shows the slippage between specialist and non-specialist forms of discourse, but provides new insights into the diverse cultural meanings of technology. It demonstrates the subtlety with which representations of familiar inventions and their producers were used to comment on broad political, social, and cultural issues, and also illuminates, the presence of other, less familiar machines and mechanics, whose comic portrayal served equally non-technological goals. No representations are

unbiased, however, and it is imperative that historians map the diverse interests informing *Punch*'s views. Comparing *Punch* with other illustrated and comic periodicals taken by bourgeois families, not to mention exploring the backgrounds of *Punch* contributors, will make these interests much more apparent.

An inclusive reading of *Punch* is nevertheless limited in a way that is of some consequence for the historian of technology. The copies of *Punch* and, for that matter, many other nineteenth-century periodicals, to which most scholars have access are bound volumes of the periodical rather than individual issues. We are thus deprived of the wrappers surrounding each issue which contained the advertisements on which the commercial fortunes of the periodical depended. *Punch* may have lamented the amount of puffery for inventions, but an inspection of rare copies of its wrappers reveals how much it relied on advertisements for books, patent medicines, inventions, and other commodities.[xxxvi] [FIGURE 4] Conversely, the fate of many inventors and inventions undoubtedly depended on the publicity afforded by widely circulated periodicals like *Punch*. *Punch* rarely engaged in direct correspondence with engineers and even when it did, it is difficult to establish how far this type of intervention, not to mention its technological representations in general, affected the long-term futures of inventions.[xxxvii] But systematic studies of wrapper advertisements—the frequently overlooked aspect of the dialogue between a periodical and the world of invention—can illuminate this question. Together with the contextualist analysis of technology in the *totality* of *Punch* material, whose insights this chapter has sought to illustrate, this research promises to transform our knowledge of how

a periodical changed the cultural meanings of technology and its role in the shaping of technology.[xxxviii]

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[*] I thank Graeme Gooday, Louise Henson and Jon Topham for help in preparing this paper.

[i] 'The Newest Nouveauté de Paris', *Punch* (hereafter '*P*') 34 (1858), 57.

[ii] Richard D. Altick, *Victorian People and Ideas: A Companion for the Modern Reader of Victorian Literature* (New York: W.W. Norton, 1973), 67. For the history of and background to *Punch* see Richard D. Altick, *Punch: The Lively Youth of a British Institution, 1841–51* (Ohio: Ohio State University Press, 1997), R. G. G. Price, *A History of* Punch (London: Collins, 1957), M. H. Spielmann, *The History of "Punch"* (London: Cassell and Company, 1895). See also Susan and Asa Briggs eds., *Cap and Bell:* Punch*'s Chronicle of English History in the Making, 1841–61* (London: Macdonald and Company, 1972), Celina Fox, *Graphic Journalism in England During the 1830s and 1840s* (New York and London: Garland Publishing, 1988), 214–263, xi–xxv.

[iii] For sales figures of *Punch* and its rivals see Alvar Ellegård, *Darwin and the General Reader: The Reception of Darwin's Theory of Evolution in the British Periodical Press, 1859–72* (Chicago: Chicago University Press, 1990), 368–84.

[iv] Altick, *Punch*, 1–40; J. Don Vann, 'Comic Periodicals' in *Victorian Periodicals and Victorian Society*, ed. by J. Don Vann and Rosemary T. VanArsdel (Toronto: Toronto University Press, 278–290, (282); Fox, *Graphic Journalism*, 214–263.

[v] Cited in Arthur A. Adrian, *Mark Lemon: First Editor of* Punch, (Oxford: Oxford

University Press, 1966), 58.

[vi] Susan and Asa Briggs, xi, xiv

[vii] [Henry] Hamilton Fyfe, *My Seven Selves* (London: George Allen, 1935), 13.

[viii] Altick, *Punch*; James G. Paradis, 'Satire and Science in Victorian Culture' in *Victorian Science in Context*, ed. by Bernard Lightman (Chicago: Chicago University Press, 1997), 143–175; R. F. Foster*, Paddy and Mr. Punch: Connections in Irish and English History* (Harmondsworth: Penguin Books, 1995), 171–94.

[ix] 'A Century of Inventions', *P*, 50 (1866), 192.

[x] Charles L. Graves, *Mr. Punch's History of Modern England* 4 vols, (London: Cassell and Company, 1921–22), I, 61–80, II, 136–147, III, 198–212, IV, 181–193; Susan and Asa Briggs, *Cap and Bell*, 106–107, 201–205.

[xi] Altick, *Punch*, 450–466, 646–652.

[xii] Asa Briggs, *Victorian Things* (London: B. T. Batsford, 1988), 372.

[xiii] For early Victorian *Punch* and the railway mania see Altick, *Punch*, 450–466.

[xiv] 'Railways', *P*, 13 (1847), 147.

[xv] 'Our Own Little Railway Once More!', *P*, 15 (1848), 135.

[xvi] 'J L' [John Leech], 'The Great Barbarian that Will Eat Up "The Brother of Moon", &c, &c, &c', *P*, 25 (1854), [98]–[99]; 'The Ultramontane Against England. To His Fetiché', *P*, 33 (1857), 149; ''Grand Railway from England to China', *P*, 3 (1842), 205; 'Railway Signals', *P*, 13 (1847), 128.

[xvii] 'Important News from China', *P*, 1 (1841), 74.

[xviii] 'The Electric Story Teller', *P*, 27 (1854), 143; 'Exit Stultus', *P*, 33 (1857), 170; 'Tricks of the Electrics', *P*, 27 (1854), 64.

[xix] 'A Suburban Shame', *P*, 24 (1853), 244.

[xx] 'The Complete Letter Writer', *P*, 11 (1848), 238; 'Protection Against the Electric Telegraph', *P*, 23 (1852), 85.

[xxi] 'The Two Giants of the Time', *P* 33 (1857), 132.

[xxii] 'The Atlantic Telegraph—A Bad Look Out for Despotism', *P*, 35 (1858), 77; 'The Universality of Electricity', *P*, 35 (1858), 165.

[xxiii] 'St. Januarius at it Again', *P*, 37 (1859), 149.

[xxiv] See, for example, 'Ballad for Old-Fashioned Farmers', *P*, 20 (1851), 212; 'Railway Meeting on Constantinople', *P*, 22 (1851), 19; 'The Fogie Family Papers', *P*, 23 (1852), 136–37.

[xxv] '"Portable" Inventions?', *P*, 17 (1849), 91.

[xxvi] See note 10.

[xxvii] 'The Fire of Genius', *P*, 21 (1851), 35; 'Self-Acting Furniture', *P*, 12 (1847), 267; 'November Fogs Seen Through at Last', *P*, 17 (1849), 194.

[xxviii] 'Grand Invention! India in Two Hours!!—Punch's Aerial Courier the Gull!!!', *P*, 4 (1843), 152; 'The Thermometer of Loyalty', *P* 18 (1850), 204.

[xxix] 'T. Firewood', 'The Vesuvius and Etna Extinction Company', *P*, 6 (1844), 63.

[xxx] 'The New Russell Six-Pounder', *P*, 38 (1860), 120; 'The New Russell Six-Pounder', *P*, 38 (1860), [121].

[xxxi] 'Look into the Engine Room', *P*, 30 (1856), 90.

[xxxii] 'Something Very Patent', *P*, 19 (1850), 250; 'The Romance of Childe Johnson in Pursuit of a Patent', *P*, 20 (1850), 1; 'Mr. Punch's Entomological Recreations: Tape-Worms', *Punch's Almanack for 1860*, *P*, 38 (1860), [iii].

[xxxiii] 'To the Sons of the Sun', *P*, 32 (1857), 242.

[xxxiv] 'The Peace Congress', *P*, 19 (1850), 112; 'N' [William Newman], 'The Advantage of Lodging under a Mechanical Genius', *P*, 18 (1850), 109; 'Engineering Evidence', *P*, 9 (1845), 12.

[xxxv] 'Dr. Reid's Process', *P*, 10 (1846), 218; 'The New Houses of Parliament', *P*, 12 (1847), 74; 'The Ventilating Guy Faux', *P*, 11 (1846), 30.

[xxxvi] A complete run of *Punch* containing the original wrappers is held in the *Punch* offices, London.

[xxxvii] See, for example, 'Will it Wash?', *P*, 33 (1857), 183 and 'The Art of Sinking a Telegraph', *P*, 33 (1857), 199.

[xxxviii] For a recent survey of the social determinants of technological change see *The Social Shaping of Technology*, ed. by Donald Mackenzie and Judy Wajcman, 2nd edn (Buckingham: Open University Press, 1999).