

Business History and Risk

Terry Gourvish

Comparative and Historical Perspectives on Business Risk and Antitrust in 20th Century America, Japan, Europe and Australia

Tony Freyer

The Risks of Working and the Risks of Not Working: trade unions, employers and responses to the risk of occupational illness in British industry, c.1890-1940s

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Business History and Risk: introduction

Terry Gourvish*

CARR, in association with the Centre for Business History, University of Leeds, held a successful workshop on 'Business History and Risk' on 20 February 2002. The workshop, which was sponsored by the ESRC, brought together business historians, economists, accountants and risk analysts to develop an interdisciplinary discussion on understandings of risk by employers, workers and governments in different historical settings.

The seminar began at the level of government. Tony Freyer (University of Alabama) surveyed patterns of antitrust and risk regulation in different national systems of capitalism, focusing on divergent national consciousnesses of accountability and competition in the United States, Europe, Japan and Australia. He described the Americans' judicially-centred and damages-based approach to regulation, and their efforts to internationalise it in the second half of the 20th century. But he also contrasted it with German and Japanese efforts to control risks by means of cartels before the Second World War. Although the American system had a powerful impact on the reshaping of both German and Japanese systems after the war, older systems were not entirely replaced. Indeed, the cartel system has proved surprisingly durable in Europe and Japan, in new forms, and the American model has not spread to other countries in any systematic form.

The concern of Oliver Westall (University of Lancaster) was with industry's management of risks. Westall, a leading historian of insurance, focused on the British insurance industry as a bearer of risk. He pointed out that the contribution of insurance to risk management has actually been quite limited historically. It has surfaced most evidently in the interaction between private enterprise and the broader provision by the State for social security. He drew attention to the lack of a systematic risk assessment in most traditional insurance businesses in the past, and to the rather narrow fronts on which statistical risk evaluation had advanced. Cartels and common practices and norms had often sufficed while competition between insurers was only moderate. However, the proliferation of insurance products, and the emergence of more aggressively competitive companies since the war gradually eroded cartel control of insurance rates. In recent years the emergence of direct insurers and 'mass customisation' has transformed the nature of risk management in this industry.

Joseph Melling (University of Exeter) examined the risks borne by employees in industrial employment, focusing on the history of industrial silicosis in Britain. He challenged the view that trade unions, by campaigning for compensation, have hindered the processes of prevention and regulation. Particular attention was given to the issue of the perception of risk, and the role of 'social norms' when risks were evaluated by individual workers. 'Acceptable risks' have been politically and socially constructed, and the medical evaluation of risk has been a much contested area between employers and workers. In the end, union positions have often been shaped by their lack of power. They could only bargain about the risks, and were unable to define the terms of the debate. Indeed, unions have probably been at their most effective where they have been able to make the costs of compensation a powerful engine of change.

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At the other end of the risk spectrum are the businesses which claim to deal systematically with the management of risk. Philip Augar, author of a major study of the City of London, *The Death of Gentlemanly Capitalism* (Allen Lane, 2000), concluded the workshop by examining the City's handling of risk management before and after the 'Big Bang'. As a former practitioner in British investment banking, he illuminated the changing cultures of 'risk' in the City. He pointed out that before 'Big Bang' the City, with its emphasis on fixed commissions and cosy self-regulation, was not used to dealing with significant levels of risk. However, the emergence of integrated investment banks after 1987 exposed institutions to quite new types of risk. The organisations themselves had few structures to deal with in-house risk management, and the shift to shareholder ownership created all kinds of new moral hazards. The newly-formed integrated operators lacked risk management skills, and most of them quickly fell prey to foreign investment banks. The latter often came from highly regulated and protected environments, and were able to use their scale and muscle to take over the smaller, and more vulnerable, British institutions.

In this volume, we publish the papers of Freyer and Melling. They provide a very good illustration of the present range of historical work in the field of 'risk'. The workshop concluded that 'risk' is a recurrent issue in business history and in many of the theories that it draws on (such as theories of entrepreneurship or regulation). However, it also emerged that little work focuses *directly* on the understanding the nature of risk itself. This comparative and interdisciplinary session highlighted multiple aspects that could be pursued by further research. In subsequent workshops, to be held in Nottingham and Southampton, some of these issues will be examined more systematically. The next workshop, at Nottingham, will consider 'Corporate Governance'.

Comparative and Historical Perspectives on Business Risk and Antitrust in 20th Century America, Japan, Europe and Australia

Tony A. Freyer**

Some years ago, a senior Japanese Ministry of Finance official responded to a question I asked concerning strengthened antitrust enforcement in his country with the observation that hard-core cartels were surely bad, but, I had to understand, Japanese business people meeting over dinner to talk about prices, was, to be frank, 'part of our culture'. The insight reminded me of Adam Smith's famous warning that, although meetings of tradesmen inevitably resulted in 'a conspiracy against the public or in some contrivance to raise prices', government ought not to encourage such meetings by demanding that business register, by requiring payment of taxes to support the 'sick, widows, and orphans', or by sanctioning business incorporation.¹ Such observations suggest the importance of cultural and governmental imperatives in assessing business's response to risk. In the following remarks, I present historical and comparative perspectives on the relationship between antitrust and business's two principal organisational approaches to risk, the large scale corporation - what Alfred Chandler calls managerial capitalism - and cartel practices.² The initial decades of the 20th century witnessed the gradual spread of managerial capitalism beyond the United States into Europe, Japan, and even smaller economies such as Australia. Yet all national governments expressly rejected adopting American-style antitrust as unsuited to their indigenous cultures and institutions. Following the Second World War, however, governments increasingly adopted workable antitrust regimes, until the internationalisation of antitrust was part of the clash between national sovereignty and the resistance to globalisation identified with the World Trade Organisation.³

Despite persistent post-war opposition to Americanisation, divergent capitalist economies and cultures adopted antitrust. As businesses throughout the world employed large-scale corporations and cartel practices to ameliorate risk, antitrust became a process through which societies and their governments acquired a new discourse of economic and social conflict resolution in order to impose accountability upon expanding yet distinctive forms of corporate capitalism.⁴ Antitrust is concerned with achieving certain practical social and market outcomes in a capitalist economy. Fundamentally, it engages business practice - whether in the form of co-operative, cartel relations or organisational centralisation through merger - at the level of management's private operational decision-making. Thus, antitrust embodies a particular consciousness about what constitutes legitimate individual or corporate conduct as well as the appropriate scope and substance of policy enforcement. Adopting antitrust as a governmental regime involves not only government officials and business in making basic policy choices but also requires the acquisition of a discourse - a certain way of thinking and communicating - about capitalist enterprise.⁵ The idea of praxis suggests the cultural and institutional imperatives inherent in re-imagining antitrust as a transnational accountability consciousness. To other societies, American antitrust represents a praxis: an example or form of teaching practice to be emulated or rejected, embodying theories of accountability and competition which constitute a sort of policy grammar which those

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societies must follow if antitrust is to be translated into customary market conduct. But societies absorb the symbolic and operational imperatives of antitrust on their own terms, incorporating it into indigenous cultural and institutional modes of conflict resolution.⁶

This praxis idea suggests how managerially centralised big corporations and cartels became internationally contested during the 1930s. In the United States, managerially centralised large corporations gradually adopted the multidivisional or 'M-form' organisational structure which General Motors' Alfred Sloan popularised, in which the strategic decisional process was separated from the operational process. The new structure enabled managers to better achieve the organisational ideal suggested by Joseph Schumpeter. One type of firm minimised cost and managed risks within a market environment it took as given; a second type, represented by the multidivisional structure, pursued a strategy which approached risk in terms of a process of continuous change. Most economic theory assumes that specialisation within the firm, including vertical integration, was a 'natural response to improved technology and markets'. According to Chandler, this assumption not only ignored historical reality, but it 'fails to consider the fact that increasing specialisation must, almost by definition, call for more carefully planned co-ordination if volume output demanded by mass markets is to be achieved'.⁷ Nevertheless, the shock of the Great Depression compelled business leaders, government authorities, and academic economic and legal experts to support the weaker organisational structures. Not only did cartelisation prevail throughout domestic and international markets, but managerially-centralised firms were common primarily in America. In Europe, managerially-centralised firms such as Britain's ICI and Germany's IG Farben were exceptional; generally, most large firms were controlled by family capitalism confronting growing production pressures arising from rearmament demands within cartelised economies. In Japan, too, while the *zaibatsu* firms hired managers, the families maintained control amidst a cartelised economy geared to war in Manchuria and China.⁸

During the 1930s American bureaucrats, managers and their economic-legal experts explained this organisational divergence in cultural terms. Everyone perceived the relative difference between managerially-centralised large corporations, and cartels; but especially given the price, currency and tariff instability engendered by the Depression there was - though only briefly in America under the short-lived National Recovery Administration (NRA) - acceptance of cartelisation as the most effective way to ensure mass production and to maintain technological innovation.⁹ By 1938, however, Thurman Arnold joined the New Deal and, re-imagining what he called the folklore of American capitalism, developed a two-pronged antitrust strategy. First, he advocated imposing accountability upon, rather than breaking up, big firms through repeated court litigation; second, he vigorously attacked international cartel behaviour, particularly in the form of patent agreements. Even so, following the rhetorical lead of President Franklin D. Roosevelt, Arnold employed a cultural discourse emphasising the 'liberty of a democracy' imperilled by 'Fascism' defined as 'a cluster of private collectivisms ... a concealed cartel system after the European model'. In addition, New Deal liberalism defined the endangered 'liberty' in terms of a distinctive capitalist order and consumer society in which consumption ameliorated the social conflict between labour and capital.¹⁰

Advocates of cartelisation elsewhere in the world rejected the practice and symbol of American antitrust. As David Gerber has demonstrated, Europeans possessed an indigenous regulatory tradition that policed monopolistic conduct of cartels and large corporations through administrative supervision of contractual transactions. Thus, European commentators

recognised that business's endeavour to reduce market risks associated with 'excessive competition' could result in unfair trade practices or monopolistic conduct, but they opposed the American judicially-centred antitrust regime for several reasons. First, its reliance upon litigation - including private actions and the civil damage system - disrupted the co-operative relationship between business and government maintained through bureaucratic expertise. Second, by banning cartels, as the Americans had always done except in wartime and during the NRA's brief reign, the adversarial system actually encouraged the formation of large corporations through merger, which indirectly fostered, in turn, American multinational corporations acquiring controlling shares in the predominantly family-owned companies of different nations. Socialists welcomed this development as a prerequisite for nationalisation. Government and business leaders in both totalitarian dictatorships and democracies exclaimed, however, that American big business threatened national sovereignty and identity. Japanese supporters of the militarist regime's imperialist wartime expansion, as well as their socialist and liberal critics, agreed with the European critique. Australians did as well. Like other British Dominions, Australia had decades earlier adopted antitrust legislation - which drew upon the US Sherman Antitrust Act of 1890 - as a defensive measure against American multinational corporations. During the 1930s, Australians ignored this heritage, secure within their now frilly cartelised protectionist economy.¹¹

The Second World War transformed the international status of antitrust. During the war, the US government incorporated antitrust into the Allied negotiating process over Lend Lease and the creation of the liberal international trade order. Many commentators have linked this international antitrust activism to a wider argument explaining the liberal trade order's ascendancy in terms of American government and big business seeking global hegemony.¹² The archival research this paper reflects disputes such an argument by noting the following. Within the US government, the Justice Department - represented initially by the Antitrust Division and Arnold - and to a lesser degree Treasury officials, urged a more aggressive international antitrust policy than those inside the State Department. The Arnold position advocated institutionalising in other nations and the International Trade Organisation (ITO) a judicially-centred antitrust regime, whereas State Department officials favoured a less restrictive approach which included recognition of wide-ranging exemptions for commodity producers and patent agreements. The US failed to pass the ITO largely because the division over the commodity policy resulted in the Truman Administration and State Department officials, especially Dean Acheson, ineffectually engaging the opposition business groups in Congress.¹³

Nevertheless, as Gerber shows, the ITO influenced several European nations gradually to reconstitute their administrative system in order to begin maintaining more competitive market relations.¹⁴ The outcome of American efforts to institute antitrust regimes abroad was nonetheless ironic. In Germany, within the US and British occupational zones, the clash between Arnold's policy stance and the military governments' more pro-business position, left the status of foreign and German cartel and monopoly practices dependent upon Ludwig Gerhard and a small but effective group known as ordoliberals identified with Franz Böhm and Walter Eucken of Freiburg University. According to Gerber, the ordoliberals transformed the weak cartel regulation tradition into a strong bureaucratically-centred antitrust regime established in the law of 1957. Ordoliberal thinking also influenced Jean Monnet's advocacy of the distinctively European cartel and monopoly regulatory approach instituted in the Treaty of Rome of 1957, creating the European Community, and, notwithstanding Harvard law professor Robert Bowie's role, also the antitrust provision of the European Coal and Steel Community six years earlier.¹⁵ Although the importance of US pressure in the

enactment of Britain's Antimonopoly Law of 1948 is disputed, clearly, that legislation and the Restrictive Trade Practices Act of 1956 rejected the litigation and civil damage system of American antitrust in favour of an administrative approach more like that of the European Community.¹⁶

In Australia, the ITO negotiations drew attention to its long moribund antitrust law. Although the ITO went down to final defeat in the US Congress, Australia was the only nation giving the measure provisional approval. Even so, the support Australian negotiators gave the ITO's antitrust provision was consistent with the campaign which 'Radical Tory' Garfield Barwick launched for a new antitrust law during the early 1960s. Enacted in 1965, the measure's practical impact was limited; it paved the way, however, for passage of the seminal Trade Practices Act of 1974 sponsored by Lionel Murphy under Gough Whitlam's short-lived Labour Government. A bipartisan political party consensus soon developed supporting the law's policy objective of protecting consumers by promoting competition. Over the next 20 years the law's effective enforcement eliminated the naked horizontal and vertical price-fixing which traditionally had characterised the Australian economy. The government's merger and anti-monopoly policies sanctioned oligopolistic competition, while ensuring against abuse imposed through market domination. By the millennium, the Trade Practice Act was revised to strengthen its enforcement capabilities under the Australian Competition and Consumer Commission.¹⁷

The story in Japan was similar if more complicated. It is well known that Japan adopted the Anti-Monopoly Law (AML) of 1947 as a result of American demands during the post-war occupation. Yet, Japanese negotiators possessed a deeper understanding of US antitrust principles than subsequent foreign or Japanese commentators have generally understood. A member of the Japanese team was Atsushi Yazawa, a young lawyer having connections with a small group of Japanese professors teaching American law in Tokyo University's famous Law Department, including Kenzo Takayanagi, who during the interwar years received legal training at Harvard and Northwestern universities. The leading Japanese negotiators drew upon Yazawa's extensive documentation and analysis of US antitrust development from its late 19th-century origins right up to Arnold's innovations prior to 1941. Like their German counterparts, the Japanese exploited tensions underlying the US position, enabling them to soften the cartel and anti-monopoly provisions proposed by two successive American negotiators during 1946-47, Posey T. Kime and Lester Salwin. More importantly, this wider perception of antitrust principles suggested to a few Japanese that the AML could be used to support more liberal economic values that had been quashed by the militarist government. These Japanese wanted to protect small business and to end family control of the *zaibatsu* companies. Some also sought to provide a new generation of younger managers with greater opportunity to advance within the big corporations, and to open up corporate ownership to more Japanese shareholders. Accordingly, the AML enacted in 1947 reflected a deeper engagement with Japanese interests and values than all but a few knew at the time or since.¹⁸

With the end of the Occupation in 1952, Japanese bureaucrats led by the Ministry of International Trade and Industry (MITI) dismantled most of the American-imposed governmental institutions. The Anti-Monopoly Law, and the Fair Trade Commission (FTC) enforcing it, persisted, however, because small business and opponents of the *zaibatsu* families - groups which subsequently were important constituents of the post-war political culture, especially the Liberal Democratic Party (LDP) - defended the need for a limited antitrust regime. In exchange for this continuing political support, a weakened and always vulnerable FTC devoted its modest resources to protecting small business, particularly

subcontractors working in the growing *keiretsu* system and shopkeepers who were central to the distribution system. A long recession began during the 1990s, ending the post-war 'economic miracle', but the market dislocation resulted in the most effective antitrust enforcement since the Allied Occupation. While the relational culture fostered co-operative conduct, the FTC's cartel prosecutions instituted a new demand for more competitive markets; prosecutions of monopoly conduct, in conjunction with a more consistent merger policy, promoted greater competition within the *keiretsu* corporate business order. Thus, because its supporters successfully adapted the AML's enforcement to Japan's institutional culture, the FTC acquired a role indirectly promoting a Japanese capitalist order capable of contesting American global economic hegemony.¹⁹

Following the Second World War, antitrust's impact on business risk management went through two phases in Europe. The extensive research of Wendy Asbeek Brusse and Richard T. Griffiths reveals that throughout the post-war era business - especially multinational manufacturing corporations - persistently employed cartel behaviour to manage market pressures. Even so, until the 1970s the growing dominance of big business and the multidivisional structure within the liberal trade order identified with the General Agreement on Tariffs and Trade (GATT), obscured the global scope of cartel practices. Nevertheless, the European Community's Commission employed antitrust theory to integrate a common market. Once the Cold War ended antitrust was more significant than ever within the reconstituted European Union, in part because the former communist states of Eastern Europe became eligible for EU membership only if they met strict accession standards that included adopting effective antitrust regimes. Accordingly, general prohibitions against cartels and monopoly conduct, as well as stricter regulation of mergers, promoted a more competitive market order across Europe.²⁰

The quarter century following 1945 witnessed the most effective antitrust enforcement in US history. Following the contours established by Arnold, antitrust officials won leading precedents limiting horizontally structured market concentration in favour of financially managed conglomerate mergers. At the same, government and private plaintiffs won damage actions on an unprecedented scale, disrupting not only domestic cartel practices but also, for the first time, effectively attacking domestic and international cartel conduct through the multinational corporations headquartered within the United States. As a result, finance-oriented managers such as Harold Geneen of International Telephone and Telegraph Corporation (ITT) developed new strategies leading to widespread diversification and conglomerate mergers.²¹

The second phase of post-war antitrust policy began during the 1970s and was still under-way by the turn of the 21st century. In America, the oil shocks of 1973 and 1979, together with the Hart-Scott-Rodino Antitrust Improvement Act of 1976, which instituted a merger notification system, converged with the growing market impact of knowledge-based industries. During the 1980s, the antitrust authorities of Ronald Reagan's Republican administration did break up AT&T, but in cases involving the relationship between monopoly and oligopolistic competition its antitrust officials allowed mergers to the greatest extent since the turn of the 20th century. By the 1990s, under Bill Clinton's Democratic administration, this facilitated - as demonstrated by the famous case against Microsoft - a reinvigorated antitrust enforcement in which consumer welfare defined more broadly than market efficiency alone was the policy goal. The administration pursued its policy, moreover, to counter an historic global merger wave and the proliferation of international cartels. In co-operation with antitrust authorities in several European nations, Japan and Korea, U.S.

antitrust officials also won a record \$1.1 billion worth of fines in the *Arthur Daniels Midlands* and related *Vitamins* price-fixing cartel cases ending in 1999.²²

The post-war internationalisation of antitrust promoted divergent capitalist systems. Social-market capitalism emerged in Europe and among British settler societies such as Australia, Canada and New Zealand, while Britain itself attempted to balance European and American capitalist systems; Japanese capitalism was based on a relational culture and unusual business-government collaboration which had parallels throughout East Asia and even China. American capitalism remained, however, the most distinctive. From the 1970s on, the chronic cycle of bust and boom reflected the dominance of entrepreneurially riskier investment and diversification strategies resting upon policies of government deregulation and a public discourse enshrining values of market fundamentalism and efficiency. Even so, central to the process of change was corporate restructuring through mergers. Mergers involved the buying and selling of independent firms and divisions of firms on the stock market, giving the managing directors of the parent company direct control over the assets and earnings of subsidiaries, which usually were located in different states and nations. Managerial control facilitated a wide range of intercompany transactions, including the sale of assets of one subsidiary to another, the concealment of losses, the creative use of deficits to alter tax liability, or as occurred in the burgeoning financial scandals after 2001, the manipulation of securities regulations to support the claim of non-existent or grossly inflated profits.²³

The search for corporate accountability engendered a new international antitrust activism. With the US-Japan Strategic Impediments Initiative of the early 1990s, antitrust officials in both nations co-operated to address anti-competitive conduct in the Japanese market. In the *Boeing/McDonnell-Douglas* case, European and US antitrust authorities arrived at contrary outcomes concerning the proper balance between efficiency and larger social welfare benefits in the global market for large commercial airplanes; the European Union's antitrust office also refused to approve Honeywell's takeover of another US company despite approval from US antitrust officials. In a case concerning Microsoft's European operations, however, US and European Union antitrust officials co-operated to impose a pro-competitive remedy. As international co-operation among antitrust regimes increased as never before, demands arose for some sort of global antitrust authority that would address the full scope of competition policy on the level of the WTO. Although the future of such an organisation remained problematic at the turn of the new century, antitrust policy's traditional concern with curbing economic power - and not solely with the maintenance of narrowly defined market efficiency - had achieved global importance. Ironically, US proponents of trade unilateralism opposed co-operative antitrust policies, while anti-globalisation activists did the same because they perceived the process to be captured by multinational corporations. Globalisation thus altered the public discourse contesting managerial capitalism's legitimacy.²⁴

NOTES

1. The minister offered these and other insights during an interview in 1996 on the condition that their source would remain anonymous. For the reference from Adam Smith see Edwin Cannan (ed.) (1976) *The Wealth of Nations* (University of Chicago Press, Chicago), p144.
2. On managerial capitalism as defined by Alfred Chandler in evolving studies see *The Visible Hand: The Managerial Revolution in American Business* (Harvard University Press, Cambridge, MA, 1977); *Scale and Scope: The Dynamics of Industrial Capitalism* (Harvard University Press, Cambridge, MA, 1990); 'The United States: Engines of Economic Growth in the Capital-Intensive and Knowledge-Intensive Industries', in Alfred D. Chandler, Jr, Franco Amatori and Takashi Hikino (eds.), *Big Business and the Wealth of Nations* (Cambridge University Press, Cambridge, 1999). Two works which examine

managerial capitalism in relation to the comparison between antitrust and cartel policies in their cultural context are Thomas K. McCraw, 'Government, Big Business, and the Wealth of Nations', and Jeffrey R. Fear, 'Constructing Big Business: The Cultural Concept of the Firm', in Chandler, Amatori and Hikino (eds.), *Big Business*, pp.522-45, 546-74. Compare these works with Neil Fligstein, *The Transformation of Corporate Control* (Harvard University Press, Cambridge, MA, 1990). Leading studies of antitrust cartel and monopoly policies are: Helen Mercer, *Constructing a Competitive Order: The Hidden History of British Antitrust Policies* (Cambridge University Press, Cambridge, 1995); Wyatt Wells, *Antitrust and the Formation of the Postwar World* (Columbia University Press, New York, 2002); Ulrike Schaede, *Cooperative Capitalism, Self-regulation, Trade Associations and the Antimonopoly Law in Japan* (Oxford University Press, Oxford, 2000); Scott Newton, 'Cartels: A Non-Keynesian Approach to Market Management', and Wendy Asbeek-Brusse and Richard Griffiths, 'The Incidence of Manufacturing Cartels in Post-war Europe', in Carlo Morelli (ed.), *Cartels and Market Management in the Post-war World* (Business History Unit Occasional Paper No. 1, London School of Economics, 1997), pp.3-17, 78-117; Andrew Hopkins, *Crime Law and Business: The Sociological Sources of Australian Monopoly Law* (Australian Institute of Criminology, Canberra, 1978); Maureen Brunt, 'The Australian Antitrust Law after 20 years - A Stock Take', in 'Special Issue, The Australian Trade Practices Act of 1974. Proscription and Prescription for a more Competitive Economy', *Review of Industrial Organization*, 9 (5) (October 1994): 483-526.

3. Tony A. Freyer, 'Antitrust and Bilateralism: The US, Japanese and EU Comparative and Historical Relationship', in Clifford A. Jones and Mitsuo Matsushita (eds.), *Competition Policy in the Global Trading System* (Kluwer Law International, The Hague, 2002), pp.3-52; and for the complementary theme of comparative capitalism see the essays by Thomas K. McCraw (US), Peter Botticelli (UK), Jeffrey Fear (Germany), Jeffrey R. Bernstein (Japan), in McCraw (ed.), *Creating Modern Capitalism* (Harvard University Press, Cambridge, MA, 2000).
4. G. Bruce Doern and Stephen Wilks (eds.), *Comparative Competition Policy: National Institutions in a Global Market* (Oxford University Press, Oxford, 1999); John O. Haley and Hiroshi Iyori, *Antitrust: A New International Trade Remedy?* (Pacific Rim Law & Policy Association, University of Washington, Seattle, Washington, 1995); Jones and Matsushita (eds.), *Competition Policy in the Global Trading System* (2002); Tony Freyer, *Regulating Big Business Antitrust in Great Britain and America 1880-1990* (Cambridge University Press, Cambridge, 1992).
5. Note 2, above; and Spencer Weber Waller, 'The Language of Law and the Language of Business', *Case Western Reserve Law Review*, 52 (1) (Fall 2001): 283-338.
6. Philip Bell and Roger Bell, 'Introduction: The Dilemma of "Americanization"', in Bell and Bell (eds.), *Americanization and Australia* (University of New South Wales Press, Sydney, 1998), pp.1-14; Antonio Gramsci, edited and translated by Derek Boothman, *Further Selections from the Prison Notebooks* (University of Minnesota Press, Minneapolis, MN, 1997), pp.395, 430, 579.
7. Chandler, *Visible Hand*, quote at pp.489-90; Joseph A. Schumpeter, 'The Creative Response in Economic History', *Journal of Economic History*, 7 (November 1947): 149-59; Alfred D. Chandler, Jr, 'The United States: Engines of economic growth in the capital-intensive and knowledge-intensive industries', Chandler, Amatori and Hikino (eds.), *Big Business*, pp.63-101.
8. Mira Wilkins, *The Maturing of Multinational Enterprise: American Business Abroad from 1914 to 1970* (Harvard University Press, Cambridge, MA, 1974), pp.167-241; Wells, *Antitrust* (2002), pp.4-42; W.J. Reader, *Imperial Chemical Industries: A History. Vol. 2: The First Quarter-century, 1926-1952* (Oxford University Press, Oxford, 1975); Peter Hayes, *Industry and Ideology: IG Farben in the Nazi Era* (Cambridge University Press, Cambridge, 1987); Hidemasa Morikawa, 'Japan: Increasing Organizational Capabilities of Large Industrial Enterprises, 1880s-1980s', and Takashi Hikino, 'Managerial Control, Capital Markets, and the Wealth of Nations', Chandler, Amatori and Hikino (eds.), *Big Business*, pp.307-35, 480-96; Takafusa Nakamura, 'Depression, Recovery, and War, 1920-1945', in John W. Hall, Marius B. Jansen, Madoka Kani and Denis Twitchett (eds.), *The Cambridge History of Japan. Vol. 6: The Twentieth Century* (Cambridge University Press, Cambridge, 1988), pp.451-93.
9. Ibid., concerning managerial perspective; for bureaucrats and legal-economic experts, see David J. Gerber, *Law and Competition in Twentieth Century Europe: Protecting Prometheus* (Oxford

- University Press, Oxford, 2001), pp.115-64, 232-56; Schaede, *Cooperative Capitalism* (2000), pp.234-55; Mercer, *Constructing a Competitive Order*, pp.36-52; Freyer, *Regulating Big Business* (1992), pp.196-268; Bai Gao, *Economic Ideology and Japanese Industrial Policy: Developmentalism from 1931 to 1965* (Cambridge University Press, Cambridge, 1997), pp.67-120; Hopkins, *Crime Law and Business* (1978), pp.17-32; Bane Dyster and David Meredith, *Australia in the International Economy in the 20th Century* (Cambridge University Press, Cambridge, 1990), pp.72-162.
10. Regarding Arnold see Wells, *Antitrust*, pp.27-89; Alan Brinkley, *The End of Reform: New Deal Liberalism in Recession and War* (Vintage Books, New York, 1996), pp.86-200; Ellis W. Hawley, *The New Deal and the Problem Of Monopoly* (Princeton University Press, Princeton, NJ, 1974), pp.270-455; Franklin D. Roosevelt, 'Recommendations to Congress to Curb Monopolies and the Concentration of Economic Power, April 29, 1938', *The Public Papers and Addresses of Franklin D. Roosevelt, 1938. Vol. 7: The Continuing Struggle for Liberalism* (Macmillan Co., New York, 1941) quotes at pp.305-6, 308.
 11. Note 9, above.
 12. Compare Helen Mercer, 'The Rhetoric and Reality of Anti-trust Policies: Britain, Germany and Japan and the effects of US pressure in the 1940s', in Morelli (ed.), *Cartels and Market Management*, pp.40-77; Jonathan Zeitlin and Gary Herrigal (eds.), *Americanization and its Limits: Reworking US Technology and Management in Post-war Europe and Japan* (Oxford University Press, Oxford, 2000); Freyer, *Regulating Big Business*, pp.256-68; J.D. Gribbin, 'The Contribution of Economists to the Origins of UK Competition Policy', in P. de Wolf (ed.), *Competition in Europe. Essays in Honour of Henk W. de Jong* (Dordrecht, 1991), pp.138-41; Graham D. Taylor, 'Debate in the United States over the Control of International Cartels, 1942-1950', *International History Review*, III, No. 3 (July 1981): 385-98; Wells, *Antitrust*, pp.117-25, 209; Susan Ariel Aaronsen, *Trade and the American Dream: A Social History of Postwar Trade Policy* (University of Kentucky Press, Lexington, KY, 1996).
 13. Tony A. Freyer, *American Praxis: Globalization and Antitrust in Twentieth-century America, Japan, Australia, and Europe* (forthcoming, Cambridge University Press), Chs III and IV.
 14. Gerber, *Law and Competition in Twentieth Century Europe* (2001), pp.172-3.
 15. Ibid. pp.232-76; see also Interview, Robert Bowie with Tony Freyer, 30 April 2002. But see Wells, *Antitrust*, pp.137-74.
 16. Compare Mercer, *Constructing a Competitive Order*, pp.36-148, and Freyer, *Regulating Big Business*, pp.196-268; A.D. Neale and D.G. Goyder, *The Antitrust Laws of the United States of America. A Study of Competition Enforced by Law* (Cambridge University Press, Cambridge, 1982), pp.439-97.
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The Risks of Working Versus the Risks of not Working: trade unions, employers and responses to the risk of occupational illness in British industry, c.1890-1940s

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Introduction

In 1906 the North Wales Coal Owners met to consider the likely impact of the Workmen's Compensation Bill then before Parliament. They reviewed their employment of men over 60 years of age and came to the conclusion that:

while it is not desirable to employ men over 60 years of age particularly below ground, no drastic measures could be adopted but that steps be taken at all Collieries to quietly get rid of workmen over 65 years of age.

(North Wales Coal Owners Association Committee Minutes, 15 March 1906)

The coal owners also reviewed the disputes which had arisen 'respecting the nature and extent of injuries' and that whilst they could not insist on medical examination of all the miners, they should try to ensure that any men taken on should be physically fit and any doubtful cases referred to the colliery doctors (Minutes, 24 September 1906).

Disputes over injuries were not confined to battles between workers and colliery management. The insurance of such injured miners was often passed on from individual pits to employers' mutual insurance companies and to commercial firms which re-insured employers. It was these commercial firms which often proved the most persistent enquirers after the health of injured miners when the latter were claiming sickness benefit after accidents. They were anxious to impress on physicians, including those employed by the collieries, the need to avoid any lapse into malingering among the miners who received sickness and injury payments. One such case was that of Caradoc Jones, an employee at the Riseley Colliery during the First World War. The physician from the employers' mutual who examined Jones quoted the re-insurers with some asperity when he gave his opinion, that:

It may be that 'As a period of nine months has elapsed since the accident we should think the man ought to have recovered from the shock by this time' [but] unfortunately the man has not recovered and it is doubtful whether he ever will - When a man lies under a moving train & expects each waggon passing to be the one to kill him, & then only when the train has passed discovers that his leg is lying twenty yards away from him the resulting shock has a tendency to be somewhat serious and prolonged. The man could now be fitted with an artificial limb.

(Letter of NWCOA Mutual Association to Riseley Colliery, 30 August 1915)

Such exchanges suggest something of the complex web of contractual relations and obligations which were involved in the compensation of injured and ill employees at the beginning of the 20th century. This paper is concerned with the ways in which health risks were assessed for employees in the period from the 1890s to the early 1940s. It was written as part of my research on respiratory diseases, including projects on silicosis, anthrax and

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textile workers' illnesses, in the history of occupational health in the United Kingdom during the 20th century. This research has only been possible by collaboration with colleagues, including Mark Bufton, Pamela Dale, Janet Greenlees, Ian Mortimer and Robert Turner.

The particular concern of this paper is with the attitudes expressed by trade unions and trade unionists to the hazards found in the workplace during this period. Important work on the subject has been completed by scholars such as Peter Bartrip, Paul Weindling and (recently) Ronald Johnston, Arthur McIvor and Geoffrey Tweedale.ⁱ The emphases found in such work varies, though Bartrip and Weindling suggest that trade unions in the United Kingdom have *not* energetically pursued the cause of accident and injury prevention, while Johnston, McIvor and Tweedale (discussing the particular example of asbestos poisoning) have placed the burden of responsibility for poor industrial health on the employers of labour. The research of Bartrip and Weindling indicates that trade unions in the UK contributed to the poor safety culture of the British workplace by their concern to pursue compensation awards rather than devoting their resources to demanding better standards of safety and accident prevention in industry.ⁱⁱ

Bartrip's recent study of asbestosis poisoning largely defends the policies pursued by the major employer in the manufacture of asbestos, sharply contrasting with Tweedale's account of corporate criminality.ⁱⁱⁱ The historical literature on industrial injury and illness is, therefore, often polarised between radical criticism of capitalist negligence and official indifference versus studies which note the widespread ignorance of the hazards which existed and the complicity of the unions in pressing for financial compensation over higher safety standards. Similar divisions can be traced in the research completed in North America and Australasia as well as Europe in recent years, as historians and social scientists have found their judgements given greater weight and impetus by the unprecedented and still expanding litigation claims of those who have suffered from industrial and environmental toxins.^{iv} Almost inevitably, historical evidence has been drawn into the attempts to attach responsibility and blame to different parties in these legal contests.

The present paper considers the scope for a model of behaviour which would explain the motivations of the different actors in terms of the constraints as well as the perceived interests of the parties involved in cases of industrial injury and illness. Individuals and groups who calculate risks at work and the terms on which a claim for sickness and/or compensation can be made, will clearly be influenced by a number of considerations. These are likely to include such factors as the legal entitlements for benefit, the availability of clear evidence of liability, the costs of making claims and litigation, the financial consequences of claims for the business and trade – including the impact on purchasers of the goods produced, the age and sex of the claimants, the state of the labour market and prospects for continued or re-employment, and so on. The different parties will almost certainly have unequal access to information about a hazard, accident or illness and the degree of uncertainty and inequality will also be determined by the quantity, quality and status of the information (and evidence) available about the injury or sickness.

In considering the historical impact which trade unions have had upon the levels of injury and illness at work, it is important to distinguish between their role as industrial bargaining agents for the workforce (where they would undertake a wide range of activities in relation to jobs, wages, safety and other issues that are apparent in cases such as that of Caradoc Jones noted above), and their activities in relation to the making of policy and the legal framework for dealing with prevention and compensation, where they clearly were one amongst many

actors.^v Trade unions often developed bargaining practices and precedents which were explicitly concerned with wages or hours rather than safety, though their agreements could well have consequences for health and safety at work. It was in their role as reform campaigners and as a legislative pressure group that they were more likely to become involved in considerations of preventing death and injury at work or securing improved compensation for their members. In both areas of their activity: bargaining and legislative campaigning or consultation, trade unions act within constraints imposed on them by other actors as well as their own members.

In response to the argument that trade unions in Britain have historically privileged monetary compensation over securing adequate safety standards, it is arguable that there is, and was, no intrinsic or necessary conflict between the pursuit of higher compensation rewards and the promotion of safety at work. Second, trade unions were working with limited information about the nature of the hazards which their members faced. They were also always liable to balance the known risks posed by a productive process (such as cutting coal) against the costs of lower earnings or less employment which might accompany more rigorous safety standards. Trade unions might find difficulty in persuading their own members of the benefits of securing safety at the cost of job or wage losses when alternative employment was difficult to secure. Safety at work might be seen as a welfare good which carried a variable price for workers as well as employers and taxpayers. Its cost might vary with the business cycle as well as the marginal returns of the industry. Third, it is evident that trade unions' capacity to set the terms on which the state and employers regulated industrial production was constrained by their unequal access to information and the wide range of actors who were involved in the reform and regulatory process. The values and principles on which government regulated the workplace were always likely to set the terms of reform.

So the case I am indicating is that the responsibility for the levels of industrial illness and injury lay primarily not with the union but rather with more powerful players in a context where market conditions and institutional rules defined the capacities of the different actors. The capacity of the unions and their members to secure safe working or to press for better compensation depended on circumstances over which they possessed limited control. In the period surveyed by this paper, the labour-intensive character of many British industries, the incentive payment systems widely utilised by industrial firms, and the pattern of mechanisation adopted in the early 20th century formed the fundamental working environment in which people were employed. The structure of production in the United Kingdom and the competitive pressures faced by firms in these years largely defined the conditions in which unions and members bargained over safety. These conditions would also affect their capacity and willingness to press for legal or legislative remedies for hazards in the workplace. The concern of this paper, therefore, is not to exonerate the unions or their members from any responsibility for accidents and illness but rather to extend the discussion of the models we use to explain the behaviour of the trade unions (and other agents) which faced the risk of illness at work. Workers as well as employers were clearly responding to the various risks they faced in combining together to protect their interests. Injury at work became a more visible concern in this period. The exchanges between the employers, physicians and insurers quoted above clearly indicate that the progress of legislation had a material impact on the ways in which firms perceived the costs of employment during the late 19th and early 20th centuries. Scholars such as Christopher Sellers (among others) have noted that the growth of actuarial as well as scientific knowledge in the United States, as well as Europe, contributed to the 'industrial hygiene' movement at this time.^{vi} The changing calculation of risk is therefore an historical process that deserves attention in the discussion of

occupational health and disease. The following section briefly considers some aspects of the estimation of risk before considering the historical evidence of union behaviour in regard to the problem of dust in the British workplace during these decades.

Perceptions of risk and occupational illness

One obvious question which we can ask in assessing the kind of choices people make in the face of workplace hazard is the amount of information which is available to them. As with the modern patient, we could assume that employees could give informed consent to working with health hazards if they are provided with adequate information. There has been only limited discussion of the historical experience of risk in relation to occupational health, though most debates on the responses of workers to the appearance of hazard has taken place among economists, sociologists and psychologists who have considered the ways in which different groups calculate costs and benefits. Economists have suggested various ways in which individuals seek some premium, reward or compensation for the acceptance of higher risk. Assuming rational preferences we could make various suggestions as to how workers and their unions would approach the existence of hazards at work, and how they may figure in the contracts reached between employers and labourers. For example:

1. Where the risks of employment are known then these will usually form part of the labour contract, where wage premia will be paid for accepting work in a hazardous workplace. For example, we would expect underground miners to be paid more than surface workers with similar levels of skill and that off-shore crews on oil rigs would earn more than their on-shore counterparts. Hazard will usually form only one element in such differentials and may be implicit within the wage bargain (lower output being expected in gassy mines or where roof falls were frequent, for example).
2. Second, we might expect an employer who has invested significant resources in the training and deployment of labour to be more concerned to protect such expensive 'human capital' than similar firms which employed casual or day labour. Health and safety would be more important in the first than the second.
3. Third, we could assume that as real wages and living standards rise then employees might place more value on their continuing health, as well as their leisure time, and be more averse to taking risks that would jeopardise it. On the other hand, it may also appear that as life expectancy increased and more elderly workers were found at the workplace, the incidence of both illness and injury might increase. The mining employers referred to earlier were concerned that older workers posed a greater risk for the employer paying compensation premiums.
4. Fourth, we would expect the growth of voluntary insurance organisation among workers as well as among their employers might actually increase their sensitivity to the existence of workplace illness and encourage claims. The work of James Riley on mortality and morbidity rates in the later 19th and early 20th centuries indicates that both effects were in play as friendly society members increased their claims on society funds and took longer sick leave (though less frequently) at a time when mortality was declining.^{vii}

These kinds of assumptions are helpful in focusing on the different aspects of risk and its connection with wage bargaining, but they provide only a restricted understanding of the

range of considerations which might affect bargainers' behaviour in specific instances. Much will depend on the information available to different agents and the bargaining power of the different parties at particular moments. It is likely to be even more difficult to assess the range of influences on trade unions as they seek to frame the regulatory conditions under which their members work, and the outcome of their activities in regard to compensation provisions or other concerns.

The provision and use of information to inform choices about industrial hazards is more complicated than modern environmental science may suggest. Most writers on risks emphasise the limitations to the amount of information which people can process in reaching decisions. We could say that rationality is 'bounded' not only by the limitations of the information but also by the inherent problems of precisely weighing the knowledge which is held when making a choice. In this respect, it seems better to say that people are capable of making orderly and coherent choices rather than objectively or absolutely rational ones. Even when choice and risks are arithmetically very clear, people will not always choose in a strictly logical or consistent way, as research on the 'failure of invariance' has demonstrated. To quote Tversky and Kahneman, 'Choice is a constructive and contingent process'.^{viii} It is arguable that choices will always be guided by reference points which are themselves contingent and historically peculiar rather than constant.^{ix} Not only is the information on which workers assess the hazards of work usually incomplete, dispersed and difficult to measure but the nature of the risks posed may be contested among experts as well as lay people.^x

This is not to suggest that the physical properties of hazardous substances such as lead, mercury and phosphorus were still contested in 1900. Many industrial poisons were identified. The source of other illnesses were simply unknown. Many health hazards which are today well understood were hardly suspected in the industrialisation of European societies. Yet we also know from medical and social history that there was a customary and commonplace recognition of hazard and illness before medical science dominated discussions of health. There were also scientific and epistemological disputes over the appropriate ways in which to understand physical health and the material environment, well described by John Pickstone as different 'ways of knowing'.^{xi} The commonplace use of terms such as 'miners' pthisis', 'grinders' rot' and 'farmer's lung' in the later 19th century registered the ways in which popular wisdom linked the risk of respiratory illness to particular occupations. Explaining the recognition and acceptance of these hazards is a difficult task, since it involves some appraisal of contemporaries' understanding not only of the scale of the hazard but also their capacity to make effective choices and even to change the physical environment of work.^{xii} A wage premium may have been a significant, if implicit, part of the labour contract between employers and workers in the 19th century, though it seems more likely that the calculation of hazard would be based on the more immediate risk of physical injury, trauma or death than the longer-term onset of respiratory and other illnesses. Nor is there sufficient evidence to accurately assess whether labour sought out alternative work when hazards were, imperfectly, understood. Far from refusing to work with toxic substances, some communities appear to have accepted the risk of serious illness as part of a traditional, if not necessarily a natural order for communities which depended on dangerous trades.

When we consider the respiratory tables for 1880-82 (figures presented to the Royal Commission on Labour in the 1890s by Dr Ogle and extracted by Janet Greenlees for the Exeter MA course in Medicine, Occupation and Health), we can see that very rough figures

on both mortality and respiratory illness were available to statisticians and medical physicians in the 1890s:

Occupation	Mortality Rate	Death from Lung Diseases
Clergymen	100	
Agricultural Labourers	126	100
Carpenters	148	155
Coalminers	160	148
Builders, Masons, Bricklayers	174	208
Wool Textiles	186	213
Cotton Textiles	196	250
Stone and Slate Quarry	202	268
Cutlers, Scissors-Makers	235	350
File Makers	300	360
Earthenware	313	514
Cornish Metal Miners	331	528

There are well known difficulties in using occupational mortality figures derived from the decennial census, though the point here is simply that contemporary sources indicate not only some popular understanding of the occupational origins of respiratory disease but also the growing statistical and scientific evidence linking lung disorders with dusty work. The figures for coalmining indicated a relatively moderate rate of lung disease which was in sharp contrast to not only the metal miners of Cornwall (where dangerous silica dust was a much more serious problem) but also with a range of metalworking and clay working trades.

The relationship between risk and wages was not discussed in this context and there is no obvious correspondence of likely earnings and disease in the occupations listed above. Many of the less hazardous trades were better remunerated than, say, the file makers. It is also important to note that in some of the more dangerous workplaces the simple wage contract was less common than various forms of self-employment and subcontracting. In some instances, workers may have bargained their health in return for higher wages, though our evidence remains fragmentary and often circumstantial.^{xiii} The next section briefly considers the impact of trade unionism on perceptions of the hazards of industrial illness and injury at work.

Trade unions and industrial illness in the UK, 1890s-1940s

There has been relatively little historical research (of which I am aware) on the subject of the impact of trade unionism on the incidence and perception of industrial injury in the United Kingdom. I take the basic function of a trade union to be that of providing the means to bargain collectively for its members. In addition, many trade unions have historically acted as benefit agencies which pooled the resources of workers and provided them with a basic means of insurance against the risks such as illness and injury as well as unemployment and victimisation. As Riley and many other scholars have noted, trade unions were rather less important than friendly societies and other mutual provident organisations in serving the needs of the broader population but the benefits offered by unions should not be ignored in assessments of how working people responded to the risks of working and not working.^{xiv}

The attitudes of trade unions in regard to health and safety may be influenced by the financial burden of providing benefits for members who were injured in particular trades or firms, though we have little evidence on this point. While it may be historically the case that unions pressed for compensation settlements more vigorously than safety regulations, these appear to be compatible objectives and the award of compensation claims could well provide employers with a strong incentive to improve safety and avoid accidents and illness at their works. It was the prospect of significant litigation that has persuaded numerous firms of the need for strict policies not only in (say) the handling of asbestos but also in a range of other policies affecting the health and well-being of the workforce.^{xv} Nor is it apparent that rigorous safety procedures and adequate compensation rules were detrimental to labour productivity and higher wages. The research of the 'Harvard School' writers such as Freeman and Medoff suggested that where the collective voice of workers was allowed to express itself via the unions then safety hazards as well as wasteful turnover of labour might be eliminated and productivity enhanced in favourable market conditions.^{xvi}

In response, critics of trade union influence might fairly ask why such well-unionised sectors of British industry including coalmining, building, shipbuilding and dock work remain so dangerous for much of the 19th and 20th centuries? The recent research of scholars such as Arthur McIvor and Ronnie Johnston on asbestos poisoning in Scotland indicates that hazards continued across a range of industrial occupations which enjoyed reasonably high levels of union representation.^{xvii} It might be argued that such evidence points to the failure of unions to effectively police working practices as well as the delinquency of their employers.

Another consideration is that attitudes of both employers and unionised workers would vary over the business cycle, more particularly when there was high or sustained unemployment. In periods of high and/or long-term unemployment firms may discriminate against older workers as well as those who were susceptible to illness and accident. Since exposure to hazardous conditions often had a cumulative effect on the worker, precipitating long-term illness from the repetitive strain on the body, the inhalation of dust and other cumulative injuries. We might expect these factors to damage the employment prospects of older workers in periods of high unemployment. Alternatively, it is possible that older workers with poorer prospects of employment and earnings might be more disposed to apply for compensation and other benefits, where a return to work was unlikely, thus converting illness payments into a long-term maintenance payment. Younger workers who wished to remain in industry may be less liable to claim injury, particularly where the illnesses would harm their prospects of future employment in the industry.^{xviii} Where trade unions were able to persuade firms to make compensation claims, such payments could provide older workers with some incentive to leave the workforce and to pass the costs of restructuring labour on to the insurers. In this situation, injury payments may become a tacit bargain between employers and unions. Employers would presumably only collude in such claims where the estimated costs to them were lower than retaining higher-risk workers or discarding it by other means.

The evidence presented in a number of studies of occupational illness suggest that only in limited instances can the persistence of unsafe practices in the workplace be directly attributed to the policies of the unions or even local officials. Such problems were more likely to arise from the behaviour of trade unionists ignoring safety practices rather than from any policies or bargaining practices of the trade union itself, more particularly as unions were usually anxious to develop and retain formal procedures to promote health and safety. Where unions possessed a low density of members or where poor discipline and control over members existed (even if the union membership was high), their capacity to enforce strict

observance of safety rules may be limited.^{xix} Even then the spread of unsafe working could arise from direct or indirect collusion between production workers seeking higher output and their managers, as existed in both British and Australian coalmining in the interwar years, than the existence or policies of trade unions.^{xx}

The causes and character of industrial injuries vary widely between sectors of production, from the commonplace accidents recorded on the waterfront and in the building trades to the specific and often complex maladies which were associated with the manufacture of dyes and chemicals to the cleaning of textile fibres. The outbreak of human anthrax cases reported in the industrial districts of West Yorkshire and the major ports of Britain from the mid-19th century was particularly associated with the sorting and cleaning of wool fleeces and horsehair or hides which originated in countries where the anthrax bacillus was endemic in the animal population. The pioneering forensic investigations of these illnesses contributed to the key decision to render the employer liable to compensate the worker who suffered illness from a small number of occupational diseases scheduled under the Workmen's Compensation Act of 1906. Trade unions and trades councils played an important role in bringing such cases to the attention of the medical and civic authorities.^{xxi}

Yet the numbers involved in anthrax infections were insignificant when compared to the tens of thousands of workers injured every year in the industrial workplace: most of the damage inflicted on the workforce appears to have arisen from the continued use of brute force and muscle power in the extractive, construction and manufacturing industries in the late 19th and early 20th centuries. Most accidents and illnesses in the UK appear to be characteristic of a production system which relied on delegated systems of management, including piecework incentives and flexible workloads as an alternative to tightly-managed technologies over a long period of industrialisation.^{xxii} Weak supervision systems and limited penalties for employers were compounded by the readiness of workers to risk their safety or health in the pursuit of high earnings or simply under pressure of workloads and stress.

This point is broadly confirmed by a detailed examination of accidents reported at a Scottish colliery before the First World War, where two-thirds of the injuries were reported by miners and most of the rest by the support labourers who brushed and prepared the coal faces or drew away the coal.^{xxiii} Most of these injuries were bruises, wounds, lacerations, cuts, strains and sprains of varying severity. Crushes, fractures and 'injuries' were noted in a minority of cases. Even supervisors could face significant physical harm when working underground.^{xxiv} There is no record of any respiratory ailment or dust-related inhalation injury and extremely few incidents of what could be called a disease.^{xxv} Although silica was increasingly recognised as a serious hazard to miners, including colliers, it was not until 1919 that statutory regulations began to provide for ailments arising from harmful dust.

How did this picture change over the subsequent decades and what impact did trade unions have upon the pursuit of compensation versus the promotion of safety at the workplace? This is a very difficult question to answer with any conviction, given the diverse and fragmented nature of the evidence and the scope for different interpretations. There is little doubt, however, that the passage of Workmen's Compensation legislation in 1897, 1906 and during the interwar years, increased the concerns of both employers' associations and trade unions to defend the interests of their members in injury and illness cases. It is impossible to assess their approach to the risk and occurrence of workplace injury without taking into account the context in which these and other strategic concerns were discussed by the interest groups involved. In the aftermath of the 1906 legislation, the North Wales coal owners noted the

number of elderly miners receiving compensation and considered the introduction of compulsory medical examinations for their employees before deciding that the resistance of the workforce made this impracticable in the immediate future. The coal owners also wanted new employees to sign a formal declaration that they were not suffering from industrial diseases or injuries identified for compensation purposes. Once again the resistance of the union to such declarations forced the employers to exchange information in seeking to exclude the risky cases from their collieries.^{xxvi} When in 1918 the Welsh coal owners' mutual decided to cut compensation payments to miners prior to a county court judgment, a strike resulted in an agreement that the miners' agent (ie, the union official) should be consulted on the medical evidence and compensation continued until a court decision was made.^{xxvii}

The incidence of cases of nystagmus continued to concern the coal owners throughout the interwar years, even though this eye disease affected only a small minority of injured employees in any one year. Their anxiety almost certainly arose from the requirement that the employers maintain the injured employee or find him light work on the surface until an uncertain recovery took place. The cost of such maintenance could continue over many years and while the costs paled when compared to such major disasters such as the great explosion at Gresford in 1934, collieries faced significant premiums when longer-term nystagmus cases began to accumulate in the 1930s and 1940s.^{xxviii} As was indicated in the case of Caradoc Jones noted earlier, the Welsh coal owners' mutual was frustrated by the diagnosis of mental disorder and nervous collapse associated with nystagmus or other injuries at work. The owners declined to call medical physicians whose opinion was likely to favour the claim for substantial compensation in such instances and their pointed enquiry to Dr Williamson concerning Edward Whittingham's claim for industrial strain, indicated their concerns as they asked,

What evidence you found ... and whether seeing you considered the man somewhat neurotic, you are of the opinion that these symptoms were associated with the prospect of Whittingham having to join the Army, and even if the man did receive a strain as far back as May last, you would not have expected the several months he has had to cure him of the trouble.^{xxix}

Throughout the interwar period the great majority of coalmining injuries recorded continued to be bodily abrasions and crush accidents, though dermatitis as well as silicosis slowly began to emerge in the registers of the employers' mutuals and commercial insurers. While the greatest numbers of silica-related colliery cases were concentrated in the anthracite coalfields of South Wales, numerous cases were recorded across Britain. Respiratory problems of miners were discussed by the North Wales Mutual before the First World War as miners attempted to link tuberculosis to accidents at work, though the mutual associations were again concerned with false claims and malingering from individuals they regarded as having poor motivation to work.^{xxx} The first case of silicosis in North Wales for which records still exist was that of Abel Jones in 1929, and as late as 1935-38 there appear to have been only one or two cases of silicosis reported each year, rising to a handful in 1939 for the whole of the district.^{xxxi}

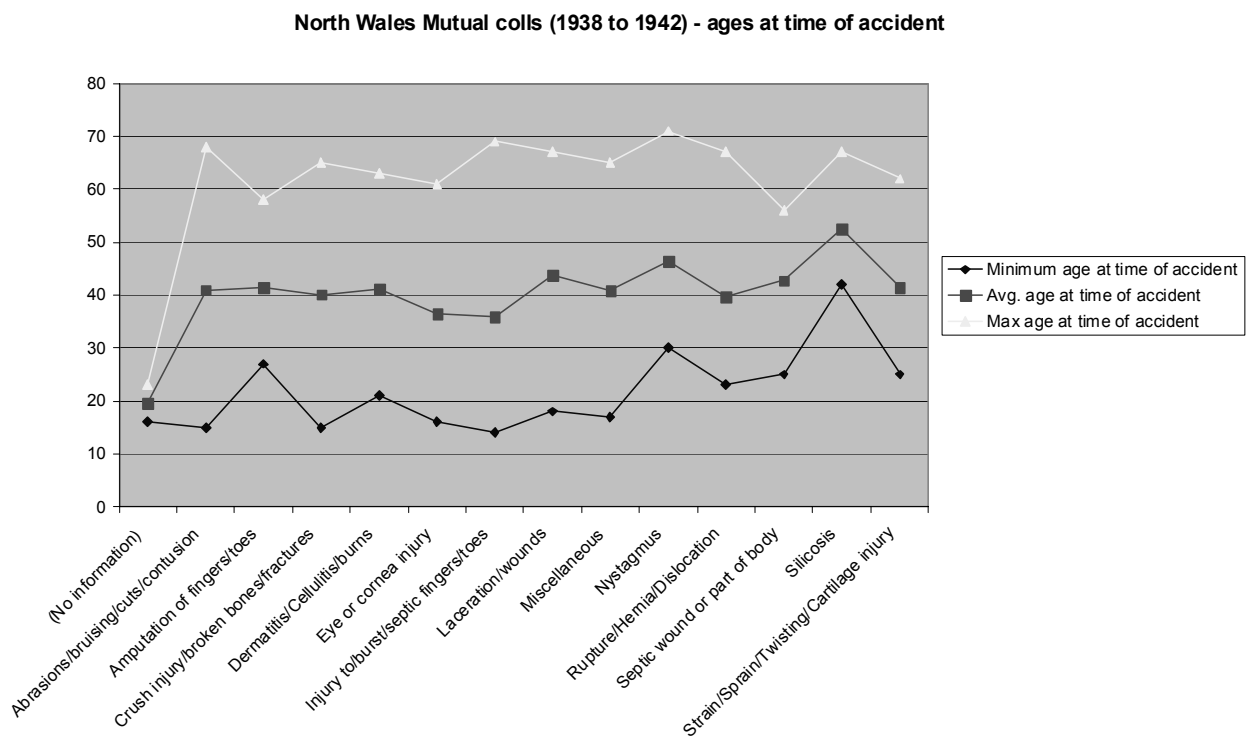
The limited evidence surveyed from employers' mutuals in coal mining gives us only an indirect insight into the ways in which miners and their unions presented injuries and compensation claims in the first four decades of the 20th century, though the insurance records give little weight to the argument that unions were indifferent to safety concerns or

that they privileged compensation claims over the protection of the colliery workforce. The broad pattern of injury claims remained remarkably stable over the period and there is little sign of any substantial shifts in favour of compensation for long-term illnesses such as silicosis, and cases of nystagmus were often contested by colliery firms. The figures for the age groups making the claims and the length of illness again do not suggest any dramatic changes as labour market conditions altered in the 1920s and 1930s, nor is there much sign that the trade unions pressed the case of older workers or that employers colluded in such claims as a means of reshaping their workforce in favour of younger, more productive employees.

Injuries Recorded By North Wales Coal Owners' Mutual, 1938-42

Broad Type Injury	Minimum age at time of accident	Average age at time of accident	Maximum age at time of accident	Count cases
(No information)	16	19.5	23	16
Abrasions/bruising/cuts/contusion	15	40.97	68	122
Amputation of fingers/toes	27	41.4	58	8
Crush injury/broken bones/fractures	15	40.0	65	153
Dermatitis/cellulitis/burns	21	41.0	63	15
Eye or cornea injury	16	36.4	61	21
Injury to/burst/septic fingers/toes	14	35.8	69	159
Laceration/wounds	18	43.75	67	32
Miscellaneous	17	40.9	65	89
Nystagmus	30	46.3	71	69
Rupture/Hernia/Dislocation	23	39.6	67	12
Septic wound or part of body	25	42.75	56	13
Silicosis	42	52.4	67	8
Strain/Sprain/Twisting/Cartilage injury	25	41.4	62	46

Broad Type Injury	Minimum days off work	Average days off work	Maximum days off work	Count cases
(No information)	2	12.50	55	9
Abrasions/bruising/cuts/contusion	4	47.60	374	78
Amputation of fingers/toes	65	93.60	151	3
Crush injury/broken bones/fractures	7	105.30	340	42
Dermatitis/cellulitis/burns	20	88.80	230	9
Eye or cornea injury	5	51.90	193	15
Injury to/burst/septic fingers/toes	6	45.20	214	104
Laceration/wounds	18	43.05	130	19
Miscellaneous	7	58.30	429	60
Nystagmus	5	97.20	324	19
Rupture/hernia/dislocation	39	78.25	160	4
Septic wound or part of body	37	85.20	212	6
Strain/sprain/twisting/cartilage injury	10	52.00	292	25



The evidence presented of types of injury for Wales at the end of our period does not itself, of course, demonstrate that trade unions were not pursuing compensation at the expense of safety considerations. Even if the colliery trade unions were not particularly successful, before the changed labour market and political circumstances of the 1940s, in promoting the compensation claims of even a highly unionised labour force in sectors such as coalmining, they may still have overlooked the importance of preventive safety in favour of pursuing financial awards in the courts. The most appropriate way to assess this argument is to consider the role of the trade unions in the framing of legislation and regulations which were

designed to improve workplace safety rather than industrial compensation in the period under review. In particular, the discussion is concerned with the measures which were introduced to deal with the industrial disease of silicosis in the years after 1914 and the impact of these schemes on the workforce.

Trade unions, industrial disease and the policy process: regulating silicosis in the UK

During the 1890s the Home Office of the British government introduced a number of important regulations to control the hazards posed by ‘dangerous trades’, and from 1895 began to assemble the medical personnel within its Factory Department which was responsible for many of the key policy innovations of the early 20th century. The risks to respiratory health posed by dust in the workplace was appreciated, though the great interest in bacteria and micro-organisms from the 1880s drew some of the attention away from the dangers of inorganic mineral dust. The damage to human respiration posed by silica was only recognised in the early 20th century. Silicosis is a progressive condition which usually results from lengthy exposure to fine quartz or silica dust. After ten years or more then ‘simple’ silicosis with characteristic lung nodules could be detected and sufferers who were exposed for 15 or 20 years could develop advanced silicosis, often accompanied by tubercular disorders as well as severe fibrosis with hardening and thickening of the lung. There remains no cure for this disease. Pioneering research by Haldane and others in Britain and by physicians working with miners on the South African gold fields led to important advances in the understanding of the hazards posed by fine silica but it was not until 1919 that the first significant legislation was passed in the UK to classify the industrial disease and to regulate trades where silicosis was a serious threat.

Those workers most at risk from silica injuries were found in the specialist trade of ganister (or fireclay) mining and refractories manufacture, slate mining and the grinding and filing of tools or cutlery in Yorkshire, as well as the making of earthenware and more general mining operations. The schemes which were introduced to protect and compensate these groups were confined to particular trades rather than offer a comprehensive scheme and it is clear that their coverage remained incomplete before the 1940s. Preventive measures to limit the risk of silica inhalation were also designed in the interwar period though we have seen that the symptoms of industrial disease were often a matter of dispute between employers and their workers. What contribution did trade unions make to the framing of safety regulations in these years and can it be said that they devoted more energy to securing legal awards of compensation than to securing improved working conditions for their members?

Answering this question requires some understanding of the policy process which defined the terms on which industrial injuries were regulated. Barry Turner often discussed disasters and accidents as the outcome of energy plus misinformation.^{xxxii} Writers on the perception of risk often note that the agreement on the levels of ‘acceptable risk’ which may be tolerated is inevitably a political as well as a technical process: that policy outcomes on regulating hazard involve some bargaining or trade-off between different interests as well as alternative solutions.^{xxxiii} In this respect, we might say that the framing of solutions to industrial health hazards requires the existence of significant anxiety plus information plus consent. For much of this period, leading groups in the making of policy and regulating workplace health struggled not only to promote their collective interests but also to capture control of the way in which the problem was defined and the relevant information to be discussed. The main actors in the case of occupational health reforms were state legislators and civil servants, the

employers (or their trade associations), insurance companies and mutuals, the unions, medical professionals and industrial engineers or related scientists.^{xxxiv}

The progress of silicosis regulation after the passage of the 1906 Workmen's Compensation Act suggests the importance of voluntary contractual insurance to the compensation of workers throughout the early 20th century and the reluctance of legislators and civil servants to introduce any comprehensive state scheme of accident and illness insurance. The uneven growth of industrial schemes suggests that policy solutions to the silicosis problem were limited by four basic constraints: the first was the disputed nature of the scientific and medical evidence and the limits of available technology, particularly X-ray equipment, to provide an accurate diagnosis. In particular, there were struggles between different branches of expertise as well as among scientists who were sponsored by rival funding sources. The second constraint on the growth of effective schemes of prevention and compensation lay in the diverse and fragmentary structure of employment relations in some of the most hazardous industries. As noted earlier, the persistence of self-employment, subcontracting and piecework systems in British industries, as well as the regional concentration of particular trades, meant that the comprehensive regulation of employment contracts and ascertaining liability for injury continued to be a very difficult task even in the interwar period.^{xxxv} A third important obstacle to the discovery of effective solutions posed by the silica hazard can be traced to the structure of state institutions themselves, as they had been inherited from the Victorian period. The arrangements established for the legal redress of industrial injury remained distinct from the growth of state pensions and the national insurance against sickness and unemployment developed before 1914. This may be contrasted, as Peter Hennock has noted, with the provisions developed to deal with similar risks in contemporary Germany.^{xxxvi} Impediments to a comprehensive state solution to growing concerns about industrial injury and illness can also be found in the complex division of responsibility for workers' disease within government, ranging from the factory and medical inspectorate of the Home Office to the responsibilities of the Local Government Board, the Mines Department and even the Board of Trade. A final and related obstacle to reaching agreement on the scope of legislative control can be detected in the intellectual and cultural predisposition of the leading actors. Conflicts between socialist or radical legislators and commercial interests could be predicted in the years following the First World War, though battles between civil servants and private employers were also apparent in the attempts to introduce silicosis reforms. Since interwar governments largely followed the principles of voluntary insurance and consensual agreement between industrial interests which were established in the 19th century, the outbreak of serious conflict on questions of industrial injury seriously hampered progress.^{xxxvii}

There is little space here to detail empirical evidence in support of the assessment outlined above and what follows is a brief discussion of responses to government proposals for the protection and compensation of workers between the wars. During the exchanges on the reform of Workmen's Compensation reform in 1906, a fairly robust consensus was reached between employers, organised labour and government on the provisions for industrial illness.^{xxxviii} Research by medical inspectors of factories, including Dr Edgar Collis on ganister mining in the Sheffield area, demonstrated the dust hazards caused by the use of explosives and led to strong calls from workers' representatives for silicosis to be scheduled under the 1906 legislation and for the introduction of state aid to assist the sufferers. The scheduling of silicosis was strongly opposed by employers, who proposed the model of voluntary mutual insurance, and the call for state funding was rejected by civil servants at the Home Office in 1917.^{xxxix} In the event, the collective insurance model was adopted for

ganister mining in 1919. Claims on the fund proved so limited that by 1937 reserves of £96,000 had accumulated and the levy on firms was reduced. The balance sheet at the end of 1946 showed there were about 1,500 death claims and fewer than 16,000 awards for total incapacity as the directors pressed for the winding-up of the scheme.^{xi}

The ganister compensation formula was agreed in the relatively prosperous conditions of 1918-19 when the Home Office negotiated with relatively few employers. It proved much more difficult to secure agreement on a scheme to cover those employed in the notoriously hazardous trades of cutlery and tool grinding, also concentrated in the Sheffield district but extending into the Midlands metalworking region. Workmen's compensation reform was actively discussed in 1922-23 and, in 1924, legislation was passed to provide for compensation to silicosis sufferers, though the government continued to adhere to the model of mutual insurance contributions by the employers rather than state support. The respiratory diseases associated with the Sheffield grinding trades were particularly associated with the sandstone wheels used in the factory 'tenements' and civil servants recognised that compliance with statutory regulations and the introduction of modern ventilating plant would probably mean the demise of the tenement system.^{xli} The evils of the tenement workshops were compounded by the persistence of 'little masters' in the metal grinding trades, for as both civil servants and larger employers recognised, there was no contract of service involved and 'the occupiers of these tenements are not workmen within the meaning of the Compensation Act.' It was estimated that there were well over 300 little masters still working in 1926, the large majority being cutlery grinders – often on contracts arranged with larger cutlery firms.^{xlii} They represented a significant minority of those employed on the grinding stones in the industry.^{xliii}

The civil servants attempted to persuade the edge tool manufacturers of Birmingham to join with the Sheffield manufacturers in a mutual insurance scheme, though the latter were already members of a Midlands mutual and firmly resisted the move.^{xliv} The Home Office proposals for offering some cover to older workers who had already been long employed on sandstones (and were therefore likely to become claimants) were also subjected to ruthless criticism by the government actuary, Sir Alfred Watson, who suggested that the refractories model could not be applied to the grinding trades without bankrupting many firms.^{xlv} The Sheffield firms offered limited co-operation if the Home Office were to defer any introduction of the scheme until 1930 but steadfastly refused to compromise on any earlier project, provoking an infuriated Joynson Hicks (Secretary of State) to warn them:

If your Association decline to 'play the game' I shall have no option but to consider taking other steps, either by placing the liability on the individual employer, or in some other way, to provide for the payment of compensation.^{xlvi}

In fact the threat was largely a hollow one since the Home Office was very reluctant to introduce any radical provisions for compensation as civil servants agreed that 'the Yorkshire temperament being what it is', the Sheffield employers would be unlikely to cover any scheme introduced by the Home Office and that it would be 'most unfortunate if we were to be landed permanently with this piece of work'.^{xlvii} Even the Birmingham Edge Tool Manufacturers insisted that any scheme should be confined to new employees with no significant experience of the industry, which would effectively restrict benefits to claims for 20 years or more and exclude most employees. The Home Office similarly failed to persuade the Iron Trades Insurance Company to administer a scheme. The only progress to 1927 was a proposal to bring the Sheffield tenement workers under the provisions of the Unemployment

Insurance Acts where employers and trade unions could agree on the abolition of subcontracting rents.^{xlviii}

The evidence drawn from the Home Office files on the silicosis schemes offers little support for the argument that trade unions were primarily concerned with monetary settlements rather than prevention, or that such preferences made any significant impact on the uneven advance of schemes to protect workers from the hazard of silica after 1906. It is true that debates over compensation were central to the discussion of industrial illness in these years and that, as Bartrip and Burman have indicated, Workmen's Compensation brought difficulties as well as benefits for workers. Many of the Labour reformers argued that the Holman Gregory inquiry into workmen's compensation provisions had revealed the scandalous waste of premium income and that accident prevention as well as compensation levels needed to be substantially improved. The industrial employers, on the other hand, strongly objected to accident prevention regulations being included in compensation legislation during 1922-23 rather than being introduced by Factory Acts.^{xlix}

There was fresh legislation to regulate both silicosis and asbestosis in 1930-31. The debate between Peter Bartrip and Geoffrey Tweedale on the significance of the asbestos regulations for the prevention of dust-related illness reflects some of the divisions within the scholarly literature on the degree of collusion between industrial employers, medical men and civil servants in the introduction of safety measures to promote safety in the workplace.¹ The pattern of silicosis disease in the UK indicates a rather different pattern from that of asbestosis and cancers related to the use of asbestos. In contrast to what some writers have assumed, there appears to have been greater progress in measures to restrict the permeation of silica dust in industry than in agreeing the terms on which compensation could be offered. For it was widely recognised by the 1920s that silicosis was a progressive, chronic illness which resulted from many years of service in dusty mines, workshops and other confined spaces where silica was present. The problem was to insure older workers who had already been well exposed to the danger against the risks of future infection. This dilemma had still not been resolved by the 1940s when fresh research initiatives by Cummins, Fletcher and others moved the focus of the debate (and of compensation campaigns) away from pure silica and towards all forms of dust in the coalmining industry. Within a relatively short period the time-honoured recognition of silicosis as a distinctive threat to the industrial worker was transformed as it was identified as one form of pneumoconiosis. The changing balance of power in the industry during the 1940s also removed some of the obstacles to compensation provisions by the time the coalmines were nationalised by the post-war Labour government.

Conclusions

There has been considerable debate among historians of occupational health on the policies adopted by British trade unions towards the protection of workers in industry and the balance of attention which was given to compensation claims. The calculation of risk and the compilation of actuarial or 'risk biographies' has figured more generally in discussions of policy formulation during the late 19th and early 20th centuries. The historical literature continues to be polarised between the critics of irresponsible corporate capitalism who have generally emphasised the failure of major employers to provide safe working conditions, and other researchers who document the limited information available to all actors and the tendency of unions, and their members, to pursue monetary rewards in preference to improving or even maintaining safety standards at work. This paper has argued that the secondary literature on risk reveals the limited capacity of individuals and groups to calculate

their own interests in a detailed and consistent way. Contemporary reference points and cultural assumptions are likely to influence choices as well as the physical limits to rapid processing of information. In evaluating the role of trade unions in regard to the risks of occupational injury and illness faced by their members, it is suggested that we should distinguish between the bargaining role of unions and their participation in the making of policy and regulations in industry. The predisposition of unions to privilege either income or monetary compensation over the health and safety of members will depend, it is suggested in this paper, on a range of specific calculations. It is not self-evident that workers will need to trade off safety against such risks as reduced output, wages and compensation. There is little evidence in the sources surveyed above that there was any consistent inclination of labour representatives to relax safety campaigns in favour of monetary compensation. They argued during and after the Holman Gregory report on workmen's compensation that safety standards were essential to protect workers and that increased benefits would provide employers with an incentive to prevent injuries.

The existence of known hazards in the workplace may well have secured a wage premium for certain groups of employees in the 19th century, though the wide disparity between known incidence of lung disease and wage levels shows that there is no simple, direct correlation between the degree of hazard and the league table of money wages paid to labour. Similarly, the demand for improved safety may well decrease in periods of high unemployment when profit margins and wage levels were squeezed, though different sections of the workplace may vary in their response to the prospect of declaring themselves injured at work. For some workers the risk of unemployment may have outweighed the hazards of working. The limited evidence gathered thus far from the coalmining industries of Scotland and North Wales does not indicate that silicosis and other long-term diseases were prominent in the compensation claims of coal workers. Respiratory illness tended to be associated with older colliers, as would be expected, though most industrial injuries were distributed across the age ranges of those employed in the industry. If miners' unions were seeking to secure compensation payments for those with chest complaints they appear to have had very limited success in the North Wales collieries, though they fostered a compensation culture. Nor were they able to bargain successfully to allow older workers to leave the industry via the compensation regulations. Even if employers had wished to collude in such policies and shift the burden of shaking out their workforce on the insurance schemes in which they participated, both the employers' mutuals and the commercial firms were vigilant in scouring the lists of nystagmus and other claimants to ensure that malingering was not permitted.

The evidence surveyed in this paper on the contribution of the trade unions to the making of compensation policy in these years again suggests the limits rather than the strength of their influence over the terms on which their injured members could secure benefits. It has been argued here that there existed important institutional constraints on reaching solutions to the problems of occupational illness in the UK at this period. One of the most important restrictions on the scope of policy lay in the complex web of employment and subcontracting relations in some of the most hazardous production processes, obscuring the liability of employers to those engaged in noxious occupations. In contrast to what some studies have shown, it was among the least organised and more fragmented enterprises rather than the larger corporations that many of the greatest threats to workers' health persisted into the early 20th century. A second fundamental constraint could be traced to the reluctance of successive British governments to undertake the responsibility of insuring bad risks among the workforce. There was no comprehensive scheme of insurance against occupational illness to complement the schemes of national insurance introduced in 1911.

The determination of Parliament and civil servants to avoid shouldering the burden of workmen's compensation before and after the Holman Gregory Report (which exposed the evils of commercial insurance but decided against nationalising the insurance system), may have been influenced by a concern to preserve voluntary collective bargaining in general, though the consequence was that the employers retained a vital influence over policy. Where a measure of consensus among employers and unions could be secured, as in the 1906 Workmen's Compensation proposals, the various agencies of government made significant progress. In 1917-19 there were also advances in compensating, and especially preventing, silicosis in the coal industry and sectors such as the refractory brick makers. It proved virtually impossible to achieve similar schemes in the cutlery and grinding trades of Sheffield and South Yorkshire. Even here, preventive measures proved easier to secure compensation for the incurable. Sandstone was replaced as the basic grinding material by carborundum wheels. Preventive measures and ventilation regulations, as well as the introduction of carborundum wheels, water-spray drills and canvass-covered cutters for miners, resulted in measurable improvements in air quality. But the complex subcontracting and small master system of the metal grinding trades in the tenement system made it extremely difficult to gain consensus, despite the urgent demands of the trade unions. There was also a basic struggle between the Midlands employers in the foundries and metal shops who refused to take on board what they saw as the bad risks of South Yorkshire.

When the employers refused to undertake expensive insurance schemes in the interwar years and the unions were too weak or divided to push for schemes to assist the diseased, the Home Office appeared to be virtually paralysed. Even in the early 1930s there was little prospect that the state would intervene to compensate those who were most at risk or, indeed, already suffered terrible illness as a result of exposure to the dusty conditions of the work sheds. These workers were casualties of conditions which were recognised as hazardous but for which industry could not be held legally responsible. Even though an amended scheme was introduced in 1930, there is little sign of an effective insurance or compensation system for workers in some of the unhealthiest workplaces in Britain before 1940. The consequences of limited provision and the failure to agree can be found in the difficulties experienced by the sufferers of silicosis between the wars. The problem remained one of assisting the sufferers who were given little prospect of compensation and consequently had little choice but to disguise their illness and attempt to continue working in the industries which had caused their illness.

NOTES

ⁱ Peter Bartrip, 'Workmen's Compensation', in Paul Weindling, ed. *The Social History of Occupational Health* (1988) Croom Helm, London; Ronald Johnston and Arthur McIvor, *Lethal Work: A History of the Asbestos Tragedy in Scotland*, Tuckwell Press, East Linton (2000).

ⁱⁱ Little work on the welfare role of unions has been undertaken. There has been much more research completed on the role of friendly societies in the progress of health and welfare provision than on the influence of bargaining organisations of capital and labour on state social policies. Again some interest is now being shown in this neglected area.

ⁱⁱⁱ Sandra Burman and Peter Bartrip, *Wounded Soldiers of Industry*, Oxford, OUP (1983); Peter Bartrip, *Workmen's Compensation*, Gower, Aldershot (1987).

^{iv} Most notably in David Rosner and Gerald Markowitz's work. I am very grateful to Professors Rosner and Markowitz for access to their research sources in New York during a research visit in Spring 2002; their pioneering scholarship in the United States is the measure against which subsequent scholarship is assessed.

^v So my suggestion is that there are at least two main levels at which the boundaries of risk in regard to industrial illness are being played out during the period from the 1880s to the 1930s: the first is at the macro level of policy and rule-making in regard to the terms under which industrial illness could be defined and the systems developed for its regulation and prevention; and the second or micro level is the level of the application and administration of such systems.

^{vi} Christopher C. Sellers, *Hazards of the Job: From Industrial Disease to Environmental Health Science*, University of North Carolina Press, Chapel Hill, (1996) pp.8-11 and passim.

^{vii} James C. Riley, *Sick Not Dead. The Health of British Workingmen During the Mortality Decline*, John Hopkins University Press, Baltimore, MD (1997), pp.153-211 and passim. Riley suggests that as mortality declined, life expectancy and real incomes rose in the 19th century, the better-paid members of the workforce in friendly societies tended to claim for rather longer periods of illness. This increased morbidity was more pronounced amongst the more elderly members of the ageing workforce but not exclusively so.

^{viii} Tversky and Kahneman quoted in Bernstein, *Against the Gods*, pp.274, 281. Thaler is also discussed.

^{ix} The experiments with choice suggest that even if we can say people are generally risk-averse, the choices they make will depend on how they read the situation (or how it is presented to them) and that they were make.

^x Sellers, *Hazards*, provides a critical review.

^{xi} John V. Pickstone, *Ways of Knowing: A New History of Science, Technology and Medicine*, Manchester University Press, Manchester (2000), pp.151-67 and passim.

^{xii} In addition to Tversky's celebrated experiments which suggest that choice is a complicated and contingent process (where exact equivalents do not have the same attraction for people), we might note that choices are also political actions within a cultural setting. Risks are understood through customary and collective as well as individual perceptions.

^{xiii} My colleagues Roger Burt and Sandra Kippen have argued that Cornish miners who migrated to the Rand goldfields in South Africa did appreciate the severity of the dust hazard in the African mines but their continued migration suggests that they were willing to countenance the damage to their health in return for higher income. Sandra Kippen and Roger Burt, papers presented to the international conference on occupational health, Exeter, 2000. I am grateful for permission to cite this unpublished work.

^{xiv} Of course employers in some industries promote hygiene-conscious health and safety rules for their own purposes, as in the food and confectionery trades where personal cleanliness and dental care were advocated to protect the product as much as the workforce.

^{xv} It is also possible to cite various contrary examples of unions campaigning prominently over many years for health and safety legislation as well as compensation laws. Most fundamentally, it is clear that compensation was not an alternative to the promotion of safety but that it was often the prospect of significant (and

subsequently massive), litigation for damages that effectively ended such hazardous processes as the manufacture and use of asbestos in most of the industrialised world in the second half of the 20th century. The familiar complaint today that the 'compensation culture' makes companies very risk-averse again makes the point that safety comes with its own costs as well as benefits.

^{xvi} Freeman and Medoff, *What Do Unions Do?*

^{xvii} Johnston and McIvor, *Lethal Work*. Union officials often came into conflict with their own members over the level of risk posed by different processes and substances.

^{xviii} Likewise, we would reasonably expect workers faced with the prospect of unemployment to change their preferences, placing more emphasis on the retention of jobs and relatively less on claims for illness. The incentives for younger and for older workers would vary. Younger workers could reasonably hope to find re-employment in the same or a similar industry after a limited period of illness or incapacity. Older workers represented a greater risk for the employer in re-engagement, as well as being less productive in many industries where the pace of work was intensified during the interwar years. On the other hand, older workers had more likelihood of contracting long-term illnesses and of claiming for disability.

^{xix} In trying to explain changes in the regulation of industrial illness from the 1880s, it is important to trace out both the changes in the formal rules imposed on working and the ways that the different parties tried to use these rules to their own advantage.

^{xx} Joseph Melling, 'Coalmining in Britain and Australia', and Melling, 'Supervision and Safety in Coalmining', in Melling and McKinlay (eds.), *Labour Management and Industrial Politics*, Elgar, Cheltenham (1996).

^{xxi} Ian Mortimer and Joseph Melling, 'The Contest Between Commerce and Trade, on the one side, and Human Life on the other': British Government Policies for the Regulation of Anthrax Infection and the Wool Textiles Industries, 1880-1939', *Textile History*, 31 (2) (2000).

^{xxii} In any employment, but more particularly in sectors (such as mining or building work) where direct supervision is difficult, there is ample scope for collusion in the avoidance of safety practices.

^{xxiii} In the Dixon Colliery accident reports for 1912, 143 of the 214 accidents or 66.8 per cent were to miners and 32 to brushers, 16 to drawers, 9 to labourers and 7 to pithead runners.

^{xxiv} John Gardiner, a fireman or deputy, was aged 65 when injured by being jammed by a wagon, while William Brodie, 55 years old and a shotfirer, lacerated his left arm when a stone blew out of an explosive shot hole.

^{xxv} In the Dixon Colliery records for 1912, there were approximately 73 (about one-third of the accidents) bruises, 40 sprains and strains, 31 wounds, 21 lacerations, 13 'burst' fingers and other limbs, 11 cuts and 25 various 'injuries'. There were 9 cases of crushing, 2 of them severe, and 4 fractures. The repetitive injury known as 'beat hand' and 'beat knee' identified in compensation legislation in the early 20th century claimed 4 cases each and the eye disorder, nystagmus, is recorded in 3 cases. The last illness arose from poor luminosity underground.

^{xxvi} NWCO Mutual Indemnity Association, Minutes, 15 March 1906, 28 January 1909, 21 April 1913; 10 February 1916, 'It was thought nothing could be done at the present time in this matter other than keeping a record of Nystagmus cases.' See also 31 August 1916.

^{xxvii} NWCO Mutual Indemnity Minutes, 10 October 1918.

^{xxviii} *Ibid.*, 25 August 1923, 23 September 1935, 21 October 1935. The Gresford disaster cost the North Wales owners a massive total of £85,469, (BA1/6/1, Notes of Accident Returns). In 1930 there were 1,999 accidents of which 80 were nystagmus cases. A similar proportion was recorded in 1935 with 81 cases among 1,912 accidents. There appeared to be only 16 cases in 1937, 23 in 1938, 14 the following year and 19 in 1940. Figures for 1947, however, suggest that nystagmus claims cost more than £112 for cases under 6 months and £1,683 for those over 6 months, as compared to £56 and £798 for silicosis cases in the same periods.

^{xxxix} BA1/2/1, Letters, NWCO Mutual to Dr Williamson, 6 December 1918. A similar letter, in a style that Uriah Heap could have framed, had been sent on 8 January 1917 to Dr Elliott at Chester Infirmary concerning Albert Leese, regarding Dr John Hey's opinion whether the patient's pleural adhesions were connected with his industrial accident and also whether the sufferer's neurasthenia (i.e. mental neurosis or anxiety), could be remedied by employment on light work 'as the best possible cure especially seeing that you consider that as soon as the pending Law Suit was settled there was reason to expect improvement in the man's condition.'

^{xxx} NWCO Mutual, Letters, *ibid.*, 4 June 1914, 11 June 1914, 18 June 1914 for cases of George Clubb, George Duckett and William Parry. Also 9 December 1915 for E. Rogers of Hafod Colliery.

^{xxxi} BA1/6/1 and 1/6/2, Lists of Accidents. Ephraim Jones of Llay Main pit report details of silicosis on 11 June 1936, having first recorded illness on 24 May 1935. In 1937 Edward Blackwell of Ifton Colliery recorded the 'accident' of silicosis on 17 July and a report was made on 16 October. This compares with 16 cases of nystagmus and 12 of dermatitis. In 1938 there were two cases of silicosis (T.O. Foulkes of Gresford and Isaac Price of Llay Main), while in 1939 there were four cases: Thomas Emlyn Phillip, Albert Williams and J.H. Edwards of Hafod, and E.W. Lacey of Ifton. In these years there were approximately 1,800 injuries recorded in total each year.

^{xxxii} B.A. Turner, *Man-made Disasters*, London, Wykeham Publications (1978).

^{xxxiii} The suggestion I want to make is that a very simple game or bargaining model will be helpful here, as a way of understanding progress in reaching agreement on the best ways to tackle industrial illness and injury. For the rules introduced to control industrial illness and prevent injuries can be considered as the solution to particular kinds of problem. For the workable solution to be reached there has to be some acceptance of risk and avoidance of risk. In some respect risk is always present and is unavoidable. What is politically difficult is to define and acknowledge the acceptability of risk. The attitudes to the reporting of industrial illness and the decision to seek compensation for such disability would be affected by the outcome of some degree of bargaining and negotiation. There were co-operative and collusive solutions to the predicament as well as adversarial or combative approaches by different parties. At the extreme, one or more parties may refuse to co-operate in particular schemes, rejecting the premises on which any scheme is based, or to opt for adverse and combative rather than collaborative approaches to the administration of the scheme and in their dealings with policy-makers. The more complex tasks of game-theoretical analysis are well beyond my skills, but I simply want to suggest some possible influences or constraints on the behaviour of different interests who were involved in the regulation of risks associated with the workplace in the period 1880-1940.

^{xxxiv} It is at a particular conjuncture of favourable conditions and balance of forces that intervention will occur, though the terms of that solution will be contingent on the game played by the actors. There will be macro conditions but also specific conditions particular to the industry, or even to regions. The solutions will not be optimal in any absolute sense but will affect subsequent scope for change, ie, there is inertia based on existing rules and precedents which represent the investment of some actors in learning and playing by those rules. Preferences will also alter over time and space. Outcomes will certainly alter.

^{xxxv} Although a number of firms in different sectors of British industry had promoted both company insurance schemes and voluntary benefits by which workers could contract out of the provisions of employers' liability legislation, these schemes appear to have largely withered after the 1897 Compensation Act and most employers took out mutual insurance or commercial insurance policies. For a number of reasons the British state resisted pressures to contribute to industrial insurance on a similar basis to that of the national social insurance programme of 1911, so the possibility of sharing the costs was largely excluded from 1897.

^{xxxvi} Peter Hennock, *British Social Reform and German Precedents*, Oxford, Clarendon Press (1987) and 'Public provision for Old Age. Britain and Germany, 1880-1914' *Archiv für Sozialgeschichte*, 30 (1990): 81-103. Hennock's work is the most meticulous and thorough comparative scholarship on the subject. Behind and also imbedded within many of these institutional constraints were also the assumptions which different parties made about the limits of state involvement, or the rights of labour as citizens, and so on. It is significant that in 1906 two pieces of legislation were passed which were vitally influenced the ways in which industrial illness was to be approached by the British state: the first was the Workmen's Compensation Act which, for the first time, allowed the sufferers six industrial diseases to claim legal redress and compensation from their employers' in law, *as though they had been involved in an accident*. The second measure was the Trades Disputes Act, which largely confirmed the voluntary and non-legal basis of disputes resolution with British industrial relations. The

institutional and legal rules that developed from the 1880s in regard to employers' liability and workmen's compensation were significant reference points for them and their members, but at the same time there were other policies developing to prioritise prevention of hazards and other opportunities for reaching solutions.

^{xxxvii} This is not to deny the importance of distinctive political and philosophical preferences among leading civil servants, including notable reformers such as Thomas Legge, but rather to stress that the model of co-operation with private employers and insurance interests remained a critical aspect of state regulation of industrial illness.

^{xxxviii} PRO PIN 11/1, note to Herbert Gladstone from WM 23 November 1906 for pottery trade; Engineering Employers Federation (EEF), Observations on Bill, May 1906; Mining Association of Great Britain, Note of Deputation to Gladstone, p.7: 'the provisions which you have suggested are very suitable'. But cf comments of Henry Lewis of South Wales Coal Owners on rising claims since 1897, *ibid.*, p.16.

^{xxxix} PRO PIN 12/11, Files of Refractories Industries (Silicosis) Scheme, 1919, E.L. Collis, *Ganister Mining Report*, and notes 20 April 1917 and R.R. Bannatyne margin notes of 25 April 1917 on Collis Report. Comments of Brace at Conference with Workpeople, 17 July 1917; A.J. Hall, 'Memorandum on Ganister Mining', 19 December 1917, Hall to Thomas Legge, 19 December 1917.

^{xl} PRO PIN 12/14, Refractories Industries (Silicosis) Scheme, notes of employers representations, 1936-37, and memo of Government Actuary to Field at the Ministry regarding National Insurance, 21 May 1947.

^{xli} PRO PIN 12/23, Note from GB to Sir John Anderson, 2 August 1923: 'compliance will probably be impracticable in the old tenement factories'.

^{xlii} PRO PIN 12/23, Captain Hacking's Minutes of meeting with Sheffield Light Trades Association and Edge Tool Manufacturers, dated 17 June 1926. The interview may have actually taken place on 6 June 1926, when Hacking, Bannatyne, Field and Macklin of the Home Office certainly met the employers. The estimate was provided by Dr Nutt for the employers.

^{xliii} *Ibid.*, Draft 'Scheme for Grinding Metals' prepared for Government Actuary on Workmen's Compensation (Silicosis) Committee, nd but circa 1926. This paper estimated that there were 880 stones operated in the cutlery trades, with 882 grinders working and another 510 in proximity. It was similarly noted that 623 stones were devoted to edge tool grinding, with 660 grinders employed and another 400 close by. There were 200 stones (and 120 grinders) on files ground by hand and another 130 stones (110 grinders) where files were ground by machine. Home Office notes of 1926 indicated that there were 250 'reputable firms' alongside 384 little masters, with about 2,500 employed in the cutlery and edge tool trades in the Sheffield district and about 1,000 employed elsewhere.

^{xliv} *Ibid.*, Parkes, Edge Tool Manufacturers Association, at the Home Office, 3 June 1926.

^{xlv} *Ibid.*, Note by Sir Alfred Watson, nd.

^{xlvi} *Ibid.*, William Joynson Hicks to Sheffield Light Trades Employers' Association, 29 September 1926.

^{xlvii} *Ibid.*, Notes of meeting of Delevigne with Hacking and Macklin, 30 December 1926.

^{xlviii} *Ibid.*, R.R. Bannatyne, note on meeting with Bayley and Lamb, 20 April 1927. E. Field, Memo of 20 April 1927.

^{xlix} PRO PIN 11/7, Notes of a Conference of Employers, Workers and Civil Servants at the Home Office, 5 May 1922. Notes of the statements of Tom Shaw and Margaret Bondfield for the workers and of employers (including Evan Williams for the coal industry), pp.5-8.

¹ Peter Bartrip, 'Too Little Too Late? The Home Office and the Asbestos Industry Regulations, 1931', *Medical History*, 42 (1988): 421-38, criticised by Geoffrey Tweedale and Hansen in the same issue of *Medical History* and also by Tweedale in *Magic Mineral to Killer Dust* Oxford University Press, Oxford (2000). Peter Bartrip, *The Way From Dusty Death*, Athlone, London (2002) is a continuation of the debate.

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