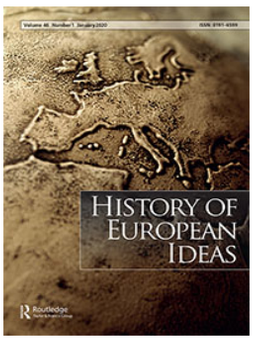

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Whoever launches the biggest Sputnik has solved the problems of society? Technology and futurism for Western European social democrats and communists in the 1950s

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ABSTRACT

By analysing the policies and ideas of German social democracy, the British Labour Party and the Italian Communist Party, this article explores their attitude towards science and their imagination of the future in the 1950s. Deeply different, social democrats and communists shared a positivist attitude in favour of scientific progress and high modernity. This painted their attitude towards the space race, peaceful nuclear power and automation. Science was conceived as a neutral power to be supported, but it required political guidance to harness it and turned it into social progress. Thus, their disagreement was over the political implications for capitalist societies experiencing growing prosperity. Science was also a powerful rhetorical argument to castigate the conservatives for failing the nation and allowing it to decline and fall behind its competitors. The article combines comparison and transnational history, innovating the latter by introducing the concepts of horizontal, vertical and antagonistic transnationalism.

KEYWORDS

Italian Communist Party (PCI); Social Democratic Party of Germany (SPD); Labour Party (UK); space race; nuclear power; transnational history

In the mid-1950s, Western European imagination was dominated by science and swung wildly between hope and fear.[1] The ten years following Hiroshima had been marked by 'the contradictory, oppressive juxtaposition of curse and blessing, of fear and hope', but 'the same terribly threatening forces, used peacefully can put the unimagined powers of nature at the service of humankind.'[2] The future was central to political imagination, the place where high aspirations for social regeneration or good life could be realised through technology. The European Left challenged pessimism because they had articulate plans for a different society and they were confident in the political and technical instruments to realise them.

This article explores the discourse on technological innovation of the two main branches of the Western European Left – social democracy and communism – by comparing three parties: the German Social Democratic Party (SPD), the British Labour Party and the Italian Communist Party (PCI). The 1950s were a propitious time to paint the future with ambitious strokes: in opposition the three parties did not deal with the drudgery of practical responsibilities, but dreamed about future power. As a reaction to their political marginalisation, the three parties renovated their programmes, principles and strategy: the SPD moved from a Marxist class party to a popular party fit to govern; the Labour Party saw a struggle between revisionists and leftists on public ownership and the

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[1] Joachim Radkau, *Geschichte der Zukunft: Prognosen, Visionen, Irrungen in Deutschland von 1945 bis heute* (München: Carl Hanser Verlag, 2017), 165.

[2] 'Von Hiroshima nach Genf, ein Weg zwischen Furcht und Hoffnung', *SPD Pressedienst*, P/X/176, 3 August 1955.

working-class character of the party; even the PCI moved from Stalinism to timidly looking for an Italian way to socialism.[3] While very different, the three parties experienced a contradiction between their ideology and the growth and prosperity of the 1950s.

1. Innovating transnational history

The analysis will focus on the official channels for debate and policy formation. Between 1954 and 1959, the British Labour Party held six conferences and the SPD four congresses. The PCI held just one congress in 1956, but the debate in preparation to the 1956 and 1960 congresses can be reconstructed in the monthly periodical *Rinascita*.[4] In addition, the analysis will cover electoral programmes, policy documents and declarations. This mostly deals with high-ranking politicians and official programmes, rather than the ideas and lived experience of ordinary activists. However, these leaders derived their legitimation and power from being part of a mass organisation – especially in opposition. Party congresses do not just confirm the official line, the leadership had to respond to or at least manipulate demands from below. This article reconstructs the social democratic and communist discourse on technology by gathering the voices of majority and minority leaders, trade unionists, intellectuals and even ordinary activists.

The political focus is necessarily limited. David Edgerton, Per Lundin and Niklas Stenlås have convincedly shown that apolitical experts are major political players and they often shaped policies concerning scientific issues more than their supposed political masters.[5] However, the article does not deal with implemented policies and scientific practice, but politicians' ideas concerning science. A concrete analysis of how British and German socialists acted in government in the 1960s requires an in-depth analysis of the ideas they had carried with them.

Comparing social democrats and communists requires justification and the choice to emphasise similarities or differences. Donald Sassoon justified such comparison by stressing that Italian communists played in Italy the same function social democrats played in Northern Europe: reference for the trade unions, main political opposition, local government in working-class areas.[6] It is tempting to overemphasise similarities, explain differences away as peculiarities of the Italian climate and treat Italian communists as crypto-social democrats. However, a comparative approach based on 'functional equivalents' is limited and does not serve precise analysis of limited actors in a limited timeframe.[7] In addition, similarities between Italian communism and Northern social democracy are not best explained by 'functional equivalencies' and national peculiarities, but by focusing on transnational circulation of ideas and influences.

Particularly significant was vertical transnationalism: communists and social democrats alike depended on ideas and images that circulated in the international public sphere – but they used them to different local purposes. They had access to two international pools of ideas concerning science. The older one was nineteenth century Positivism, embedded in labour movement's culture. As Priestland argues, the original socialist movement included strands of technocratic modernism (Saint-Simon), revolutionary egalitarianism (Owen) and individualistic romanticism (Fourier).[8] The socialist movement emerged in a period when ideas about the future became central to the

[3]Kurt Klotzbach, *Der Weg zur Staatspartei: Programmatik, praktische Politik und Organisation der deutschen. Sozialdemokratie 1945–1965* (Bonn: Dietz, 1982). Andrew Thorpe, *History of the British Labour Party* (Basingstoke: Macmillan, 1997), 136–56. Giovanni Gozzini and Renzo Martinelli, *Storia del Partito Comunista Italiano*, vol. 7, *Dall'attentato a Togliatti all'VIII congresso* (Torino: Einaudi, 1998).

[4]The journals of British and German socialism – Socialist Commentary, Tribune, Neue Gesellschaft – did not express the views of the entire party, but factions.

[5]David Edgerton, *Warfare State: Britain, 1920–1970* (Cambridge: CUP, 2006); Per Lundin, Niklas Stenlås, 'The Reform Technocrats: Strategists of the Swedish Welfare State', in *Scientists' Expertise as Performance: Between State and Society, 1860–1960*, ed. J. Vandendriessche, E. Peeters, and K. Wils (London: Pickering & Chatto, 2015), 135–46.

[6]Michele Di Donato, *I comunisti italiani e la sinistra europea: il PCI e i rapporti con le socialdemocrazie (1964–1984)* (Roma: Carocci, 2015), 10–1.

[7]Charles Tilly, *Big Structures, Large Processes, Huge Comparisons* (New York: Russell Sage Foundation, 1984), 125–6.

[8]David Priestland, *The Red Flag: A History of Communism* (New York: Grove press, 2009).

new democratic politics.[9] Marx's synthesis meant that the labour movement would not look backward and despise capitalist modernity, but offer an ever more advanced society for tomorrow. While this balance of modernist and romantic tendencies was persistent, this article focuses on the transnational factors that reinforced the connection between scientific and social progress throughout the 1950s.

The second pool of ideas were more recent thinkers, particularly John Bernal. From 1939, the Marxist scientist built an interpretative framework of the *Social Function of Science*, giving theoretical legitimation to the left-wing idea that science was power and it had to be directed by collective authority to collective goals.[10] In 1954, Bernal's *Science in History* identified as the distinctive innovation of the twentieth century the application of science to industry and agriculture – with huge social and economic consequences. Guided technological solutions could rationally solve social problems. Bernal influenced the Soviet leadership, which needed an ideological shift from the myth of Stalin to the myth of scientific and economic achievements of the Soviet Union.[11] Western European communists gladly followed the lead from Moscow. Bernal's ideas were also present in social democratic culture – he was even part of a committee of scientists that greatly influenced the Labour Party in the 1950s and 1960s.[12] Friedrich Pollock, who in 1956 wrote a ground-breaking study on automation, was also a recurrent reference and shaped Carlo Schmid's vision on automation, that the SPD Congress adopted in 1956.[13] A major encouragement for this circulation of ideas was the intensifying pace of international scientific cooperation in the post-war era. Scientific exchanges were essential for solidifying the Atlantic bloc. Due to the brain-drain towards the USA and the immense cost of big-science projects, European scientific cooperation became a pillar of the research policies of European nations.[14] Early scientific cooperation across blocs also took place, for example the International Geophysical Year 1957–58.

The 1950s saw intense horizontal transnationalism among the social democrats: national parties regularly communicated and influenced each other.[15] The Socialist International served as a forum to exchange views and circulate information, as a negotiating table to reach common positions, as a source of legitimacy for policies and strategies. Social democrats observed their foreign counterparts and often took the opportunity to adapt their policies and ideas to the local context. Herbert Wehner, prominent revisionist leader of the SPD, said that his ideas about the future owed a debt to the Swedish social democrats.[16] The British miners' leader, Sam Watson, told the SPD Congress that British and Germans were working on the same issue of technological progress.[17]

It is interesting to note that German social democrats condemned their conservative government and gave appreciation to Britain. The SPD's expert on technology, Leo Brandt, recognised Britain as model, particularly Labour MP Austen Albu.[18] Even the Italian communists appreciated the support for poor students in the British system – compared to Italy, at least.[19] Instead, British socialists condemned their conservative government for letting Britain lag behind Germany in growth and capital

[9]Lucian Hölscher, *Die Entdeckung der Zukunft* (Göttingen: Wallstein Verlag, 2016), 99–108.
[10]Audra J. Wolfe, *Freedom's Laboratory: The Cold War Struggle for the Soul of Science* (Baltimore: John Hopkins University Press, 2018), 17.
[11]Stefan Guth, 'One Future Only. The Soviet Union in the Age of the Scientific-Technical Revolution', *Journal of Modern European History* 13, no. 3 (2015): 355–76.
[12]Ben Pimlott, *Harold Wilson* (London: HarperCollins, 1992), 274.
[13]*Protokoll der Verhandlungen des Parteitages der Sozialdemokratischen Partei Deutschlands von 10. Bis 14 Juli 1956 in München* (Bonn: Vorstand der SPD, 1956), 180. See also Willy Strzelewicz, 'Die sozialistische Bewegung in der industriellen Gesellschaft', *Neue Gesellschaft*, March–April 1957.
[14]John Krige, 'The Politics of European Scientific Collaboration', in *Companion to Science in the Twentieth Century*, ed. J. Krige and D. Pestre (London: Routledge, 2003), 897–918.
[15]Talbot C. Imlay, *The Practice of Socialist Internationalism: European Socialists and International Politics, 1914–1960* (Oxford: Oxford University Press, 2018).
[16]Parteitag der SPD 1956, 202–4.
[17]Ibidem, 142–3.
[18]Ibidem, 162. Also Fritz Steinhoff, 'Um die Zukunft unseres Volkes', *SPD Pressedienst*, P/XII/69, 23 March 1957. 'Letze Chance für Hochschule und Student', *SPD Pressedienst*, P/XII/167, 23 Juli 1957.
[19]Gianfranco Ferretti, 'I giovani disertano le facoltà scientifiche?', *Rinascita*, December 1959.

investments.[20] This is a good reminder that in political debates international references are often just tactical: they serve to strengthen a point, usually by making an emotional connection, rather than providing substance for decision-making. In this case transnational exchange is strongly dictated by local conditions and interests rather than the accuracy of information.

While there was no peaceful exchange of ideas and influences between social democrats and communists – proper contacts would not begin until the 1960s[21] –, we can talk of some kind of 'antagonistic transnationalism': the action of one side forced the other to react, ideas of one side were borrowed to be rejected or radically reshaped. Italian communists made regular references to social democratic debates about technological progress and nuclear power in order to condemn the Socialist International for having accepted the capitalist system.[22] They called 'revisionist' or 'neo-capitalist' the social democratic intellectuals who allegedly argued that technological development would create a new social order spontaneously, such as Tage Erlander, Gunnar Myrdal and J.K. Galbraith[23] – confusingly, the term 'revisionist' is both an insult the communists threw at every other socialist and an accurate description of a reformist faction within the Labour Party and the SPD. The references to the revisionist thinkers of the SPD – Carlo Schmid, Heinrich Deist, Leo Brandt – could also serve to attack the Italian Socialist Party, which was moving away from the PCI.[24] The Italian communists also referenced Pollock[25] and Labour thinker John Strachey[26] as negative examples. They accused them of having misunderstood Marx's theory of pauperisation and believing that the bourgeois state could control technological development.

The future has become a central topic of cultural history: reconstructing how people imagined it is necessary to understand their ideas and frame their actions as goal-oriented and not just reactive.[27] According to Koselleck, modernity began with a new conception of the future that created an open space for human prediction, action and control.[28] Some thinkers identify the crisis of the future as a feature of the crisis of modernity. According to Hartog, the twentieth century saw a shift of regimes of historicity – the way in which the relationship between past, present and future are understood – from futurism to 'presentism.'[29] Hartog argues that despite the traumas of the First and Second World war, the post-war era was dominated by futurism, celebration of progress and the urgency to rebuild, modernise and plan at accelerating speed. The 1960s saw the prevalence of the present in political imagination and the 1970s the end of revolutionary illusions. The future was perceived not as a promise, but as a threat. Hölscher sees in the Second World War a turning point: Nazism and Communism delegitimised radical visions of future. Political dialectics became about practical proposals of gradual amelioration expressed in the language of political economy and sociology, which assumed a continuation or slight variations of present trends rather than utopian breaks.[30] In Ulrich Beck's *Risk Society*, the future was determinant for risk consciousness: political action was meant not to build the future, but to prevent future risks.[31] For Harvey, the promise of a better future was central for post-war politics and the compression of the future into the present is a mark of neo-liberalism.[32]

[20]Labour Party, *Plan for Progress. Labour's Policy for Britain's Economic Expansion* (London: Labour Party [1958]), 11–2.
[21]Di Donato, *I comunisti italiani e la sinistra europea*, 55.
[22]'La posizione degli operai inglesi sui problemi della automazione', *Rinascita*, July 1956. G.C., 'Due congressi in Gran Bretagna', *Rinascita*, October 1956. Sergio Segre, 'Vicende di una Internazionale che non è più né socialista né internazionalista', *Rinascita*, October–November 1957.
[23]Maurizio Ferrara, 'Tentativi revisionistici e fallimento degli "ex"', *Rinascita*, January 1958.
[24]Sergio Segre, 'La battaglia delle idee', *Rinascita*, June 1956. See also Perazzoli's article in this issue.
[25]Mario Spinella, 'La battaglia delle idee', *Rinascita*, December 1956.
[26]Francesco Pistolese, 'Prospettive della distensione internazionale dopo la sconfitta degli imperialisti', *Rinascita*, December 1956. Antonio Pesenti, 'La battaglia delle idee', *Rinascita*, January 1958.
[27]Radkau, *Geschichte der Zukunft*, 13.
[28]Reinhart Koselleck, *Vergangene Zukunft: Zur Semantik Geschichtlicher Zeiten* (Frankfurt Am Main: Suhrkamp, 1985).
[29]François Hartog, *Regimes of Historicity: Presentism and Experiences of Time* (New York: Columbia University Press, 2015), 107–114, 191.
[30]Hölscher, *Entdeckung der Zukunft*, 289–92.
[31]Ulrich Beck, *Risk Society: Towards a New Modernity* (London: Sage, 1992), 33–4.
[32]David Harvey, *The Condition of Postmodernity: An Enquiry into the Origins of Cultural Change* (Oxford: Blackwell, 1989), 68–9, 291.

Jenny Andersson recently challenged this simplistic interpretation of the crisis of modernity and the 1970s as a clear caesura. She identifies very different visions of the future in Post-War Europe, embodying opposite political visions. 'As the world became a space made by human beings, the future became the space of hopes and fears of what this world would become.'[33] There is a complexity in the history of the future between the end of the Second World War and the crisis of the 1970s that does not fit a reductive description of 'optimism.' This article argues this periodisation still has some values, at least applied to the Western European left: 1950s social democrats and communists alike had a bold vision of the future to be built by science, which was distinctive compared to the ideological crisis the labour movement suffered after the 1970s. However, the picture is more complex because of a constant dialectics of hope and fear and the centrality of human agency, not teleology.

2. A new age of science, a new age of peace

The future was a central political concern in the 1950s. The Frankfurt Declaration – the charter of principles of Socialist International reborn in 1951[34] – laid a claim on the future. Capitalism had produced 'immense productive forces', but proved 'incapable of satisfying the elementary needs of the world's population.'[35] The employment of science was a central issue:

> The progress of science and technical skill has given man increased power either to improve his lot or to destroy himself. For this reason production cannot be left to the play of economic liberalism but must be planned systematically for human needs.[36]

By the end of the 1950s, this tendency was stronger, not weaker. The Bad Godesberg Programme of the SPD is heavily dependent on the Frankfurt declaration and the passages above were translated almost verbatim.[37] The programme also affirmed the responsibility of the state not to misuse science.[38] Labour's programme *Signposts for the Sixties* also stated that science had created immense power to be used responsibly.[39] The document shaped Harold Wilson's rhetoric and programme at the elections of 1964 – the 'White Heat' of technological revolution –,[40] but the ideas and language dated back to the Frankfurt Declaration and party debates in the 1950s. The themes and rhetoric of 'White Heat' were not limited to Britain, but involved other Western European countries. In 1959, C.P. Snow captured this mood and turned into a synthetic, articulate discourse on the need to convert the state to science to promote social progress.[41] His *The Two Cultures and the Scientific Revolution* had an enormous impact in Britain, West Germany and Italy.

Two events were mainly responsible for stimulating the transnational imagination over science: the International Conference on the Peaceful Uses of Atomic Energy (Geneva, August 1955), which started the International Atomic Energy Agency, and the first Sputnik (October 1957), which started the Space Race. Social democrats and communists often proclaimed that these scientific events signified the beginning of the future, a future according to their ideological inclinations.

[33] Jenny Andersson, *The Future of the World: Futurology, Futurists, and the Struggle for the Post Cold War Imagination* (New York: Oxford University Press, 2018), 17. For a similar criticism see Radkau, *Geschichte der Zukunft*, 15.
[34] Ettore Costa, *The Labour Party, Denis Healey and the International Socialist Movement: Rebuilding the Socialist International during the Cold War, 1945–1951* (Cham: Palgrave Macmillan, 2018), 283–8.
[35] 'Aims and Tasks of Democratic Socialism' quoted in Julius Braunthal, *History of the International*, vol. 3, 1943–1968 (London: Gollancz, 1980), 531.
[36] Ibidem, 533.
[37] *Grundsatz der Sozialdemokratischen Partei Deutschlands* (Bonn: Vorstand der SPD, 1959), 26.
[38] Ibidem, 22.
[39] Labour Party, *Signposts for the Sixties* (London: Labour Party, 1961), 7.
[40] Steven Fielding, *The Labour Governments 1964–70*, vol. 1, *Labour and Cultural Change* (Manchester: Manchester University Press, 2003), 76–7.
[41] Edgerton, *Warfare State*, 196–210.

That nuclear energy and the Sputnik had military implications was not missed, but everyone hoped to convert the weapons of humanity's self-destruction into civilian tools. As one Labour activist said, 'I believe it would be real good socialism to send to Kenya turbo-generators instead of turbo-jets, and tractor ploughs instead of guns. These are the tools for living and not tools of death.'[42] Another Labour activist wanted to transfer the resources scientists used for nuclear weapon to research for cancer and help peoples of all colours and creeds.[43] The Socialist International welcomed the potential of nuclear power while being aware of the risks:

> The development of nuclear energy for peaceful purposes holds out the possibility of a new standard of welfare for humanity […] The nuclear age provides a new and rich inducement to move forward courageously from international conflict to international co-operation. But it holds a threat as well as a promise: for it has added to the arms of war the H-bomb, making large-scale war a danger to the survival of the human race.[44]

'The time of atomic energy begins', said the expert on technological issues of the SPD, Leo Brandt.[45] The left-wing Labour leader, Jim Griffiths welcomed the new age of nuclear energy and automation.[46] The Italian communists lauded the Geneva conference: 'We are now master of instruments able to potentially guaranteed a future of assured prosperity for the whole humankind.'[47] The SPD press release welcomed the launch of the Sputnik with similar words: 'The struggle of the human spirit to subjugate nature and invade unknown territory knows no bounds, what happened and happens in this twentieth century surpasses the sum of all the experience and knowledge gained over the past millennia.'[48] The Italian Communists said that the Soviet Union had started a new age and the Sputnik opened 'the first step on the path to the stars.'[49] The satellites forced to abandon old outmoded conceptions, introduce a new perception of man in the universe and embrace peace and cooperation.[50] This scientific achievement made poverty and violence on earth intolerable and made the future of equality and freedom from exertion almost tangible.

Social democrats and communists regularly denounced nuclear weapons and nuclear tests. In April 1956, eighteen German physicists took a stand against the nuclear armament of the German army and building and testing of nuclear weapons.[51] The SPD Congress adopted a resolution against nuclear weapons and tests in July 1956.[52] The Socialist International adopted a resolution to abolish nuclear weapons and to stop all tests in January 1957.[53] The Labour Conference accepted this commitment the same year.[54] However, in the transnational exchange the commitment became narrower, because the Labour leadership refused unilateral nuclear disarmament of Britain, which divided the party in the late 1950s. Italian communists as well appreciated the manifesto of the German physicists – of course claiming that the communists had said it first.[55] Describing radiation poisoning, everyone returned to the bombing of Hiroshima and the Japanese fishermen hit by the Bikini Atoll Atomic test.

Scientific expertise was also invoked to denounce the risks of radiation and the contamination of the atmosphere by nuclear tests. All the parties welcomed appeals by scientists such as Einstein, Russell, Pauling and Schweitzer against nuclear tests and weapons. The leader of the SPD, Erich

[42]Labour Party Annual Conference Report (LPACR) 1955, 146.
[43]LPACR 1956, 143. Also LPACR 1957, 176.
[44]LPACR 1955, 224.
[45]Parteitag der SPD 1956, 149.
[46]LPACR 1955, 125–6.
[47]R.M. [Renato Mieli], 'Gli atomi per la pace', *Rinascita*, July–August 1955.
[48]'Der erste künstliche Erdsatellit', *SPD Pressedienst*, P/XII/228, 5 October 1957.
[49]Giuseppe Boffa, 'Il lancio del III Sputnik: la più audace impresa scientifica dei nostri tempi', *Rinascita*, May 1958.
[50]Lucio Lombardo Radice, 'Un nuovo metro', *Rinascita*, October 1959. Alessandro Natta, 'Attualità e urgenza della riforma scolastica', *Rinascita*, November 1959. Alberto Masani, 'L'era cosmica e il futuro dell'uomo', *Rinascita*, December 1959.
[51]Elisabeth Kraus, *Von der Uranspaltung zur Göttinger Erklärung: Otto Hahn, Werner Heisenberg, Carl Friedrich von Weizsäcker und die Verantwortung des Wissenschaftlers* (Würzburg: Königshausen & Neumann, 2001).
[52]Parteitag der SPD 1956, 356.
[53]LPACR 1956, 200.
[54]LPACR 1957, 180.
[55]Celeste Negarville, 'La minaccia atomica incombe sull'umanità – Perché gli esperimenti debbono essere sospesi', *Rinascita*, May 1957.

Ollenhauer, said that this fight was essential for consolidating the alliance between workers and the intelligentsia – evoking a phrase by Lassalle.[56] Scientists needed to leave the ivory tower and share their knowledge about the consequences of nuclear power with the people: 'Science forces more and more the application of reason in politics.'[57] Italian communists as well demanded an alliance of workers and scientists.[58] Labour activists and politicians appealed to the expertise of scientists and doctors to demand the ban on nuclear testing in 1955[59] and 1958.[60] The advantage of invoking scientific expertise was varnishing these calls with dispassionate objectivity. Many socialist women opposed nuclear weapons and tests by using another rhetorical register – such as invoking motherhood –,[61] but some male socialists dismissed them as hysterical.[62]

3. The scientific revolution under capitalism

Generally speaking, social democrats and communists held the position that the relationship between science and socialism was positive, but not automatic or linear. Science was a good thing because it increased humanity's power and mastery over nature, but technological progress would not spontaneously benefit humankind. The potential of science was a technical matter for scientists, its application a political matter for everyone:

> Each of these scientists points out that the question of how the results of his peaceful research are used is a political issue. It is a question of political power. It is a question that directly affects every single human in every people. It touches the 'layman' as much as the scientist.[63]

It was a political responsibility not to allow this power to serve ill intent:

> We see or we start to see that science and technology have created conditions – not sufficient but necessary – for freeing man from unskilled, purely manual labour, from misery, from ignorance.[64]

> The economic, technological, scientific development is breath-taking. It is full of deadly dangers for humanity's existence, but it also full of unlimited possibilities for the welfare and happiness of human beings, if we master them.[65]

> Science has opened up for us most flattering and pleasant prospects, but science has also opened up for us the most appalling future, unless we show now some vision and some understanding.[66]

Taking Bernal's framework, communists and social democrats identified in the application of science to industry as an accelerant to production. The process came to be known under different names, 'scientific revolution' or 'second industrial revolution'. *Signposts for the Sixties* said that sixteen years of scientific revolution had increased man's power over nature more than the previous century.[67] This was the central theme of the 1956 Congress of the SPD, where Ollenhauer said that social democrats had the duty to make the future human order fairer and more rational within the Second Industrial Revolution.[68] Neither capitalism nor communism could lead humanity to a better future, only democratic planning could.

[56] *Protokoll der Verhandlungen des Parteitages der Sozialdemokratischen Partei Deutschlands vom 18. bis 23. Mai 1958 in Stuttgart* (Bonn: Vorstand der SPD), 39.
[57] Ulrich Lohmar, 'Die Wissenschaft als politische Macht', *SPD Pressedienst*, P/X/195, 25 August 1955.
[58] Celeste Negarville, 'La minaccia atomica incombe sull'umanità – Perché gli esperimenti debbono essere sospesi', *Rinascita*, May 1957.
[59] LPACR 1955, 25, 57.
[60] LPACR 1958, 184. Also Parteitag der SPD, 1956, 356.
[61] LPACR 1955, 140. Parteitag der SPD 1956, 128–9.
[62] Richard H. S. Crossman, *Backbench diaries of Richard Crossman* (London: Hamilton & Cape, 1981), Entry 4 October 1957, 619.
[63] 'Atomkraft zum Segen der Menschheit', *SPD Pressedienst*, P/XIII/194, 28 August 1958.
[64] Lucio Lombardo Radice, 'Lettere al direttore – Le scienze naturali e la battaglia delle idee', *Rinascita*, February 1954.
[65] 'Entschließung "Die zweite industrielle Revolution"' in Parteitag der SPD 1956, 353.
[66] Aneurin Bevan, LPACR 1958, 190–1.
[67] *Signposts for the Sixties*, 7.
[68] Erich Ollenhauer, Parteitag der SPD 1956, 71.

Leo Brandt identified scientific research and its immense possibilities – in particular nuclear power, electronic machineries and automation – as features of the new industrial revolution.[69] Modern scientific production required state intervention to finance the immense cost of scientific research and education of engineers and skilled workers. The new industrial revolution would have a deep transformative effect on society, thus democratic control over the commanding heights of the economy was necessary to avoid concentration of power and to share the benefits of increased production with workers and employees. Schmid believed that technical progress was just a precondition to spiritual self-actualisation: '[its] ultimate justification is the degree to which it gives people a chance to free their life's order from the constraints of external circumstances.'[70] The Labour's pamphlet for the 1959 elections was called *Your Personal Guide to the Future Labour Offers You*: an industrial order of nuclear power, synthetic materials, jet engines and automation would give British people a better life.[71]

The Italian communists denied that the new industrial revolution could be reduced to nuclear power and automation and that it meant a more humane capitalism. The first industrial revolution had not just been a technological process, but involved social and economic transformations leading to the birth of capitalism.[72] The new industrial revolution could only be socialism. In 1951, Stalin set the basic communist interpretation for technological progress: socialism always supported higher techniques for production to secure the maximum satisfaction of material and cultural needs, but capitalists supported or resisted technological innovations according to the need to increase profits.[73] Technological progress in late capitalism was always partial – 'bastard automation.'

Later in the decade, Italian communists admitted that they had been slow to recognise technological innovation and increasing productivity under capitalism – *Rinascita*'s editorial openly rejected Stalin's thesis in 1957.[74] However, as the leader of the PCI, Palmiro Togliatti, said, Marxism did not deny that technological and economic progress and the development of productive forces were possible under capitalism, even in its final crisis.[75] The disagreement about the term 'industrial revolution' was political; it was about the relationship between technological progress and capitalism. Togliatti agreed with the social democrats that the objective conditions for socialism – including technological progress – matured under capitalism.[76] However, they drew the false conclusion that socialism would spontaneously develop within capitalism, so that the task of the workers was to administer and support capitalism. It was a delusion to believe that technological progress alone and some paternalistic concessions would cancel class struggle and create a '*Bengodi universale*'[77] – 'universal Cockaigne.'

As the communist thinker and engineer Silvio Leonardi explained, monopoly industries sometimes introduced technological innovations to increase their profits, other times they decreased production to raise prices, they hindered technological innovations in other factories or produced technological unemployment, leaving human capital unused.[78] The 1956 Congress adopted this line. Technical innovations were limited to the monopoly industries with the capital to invest, while entire regions and industrial sectors remained backward.[79] Increases in productivity created technological redundancies – especially in the countryside – and greater intensity of work. Only the workers' struggle and public control of the economy would turn technological progress into social progress. The Congress concluded: 'The working-class holds technological progress as a

[69]Parteitag der SPD1956, 149–53.
[70]Ibidem, 184.
[71]Labour Party, *Your Personal Guide to the Future Labour Offers You* (London: Labour Party 1958).
[72]*VIII Congresso del Partito Comunista Italiano: Atti e risoluzioni* (Roma: Editori Riuniti 1957), 832.
[73]Stalin, *Economic Problems of Socialism in the USSR* (Peking: Foreign Languages Press, 1972), 80.
[74]'Le prospettive aperte dal XX congresso e il nuovo slancio della democrazia socialista', *Rinascita*, November 1957.
[75]*VIII Congresso*, 69.
[76]Ibidem, 58.
[77]Ibidem, 70.
[78]Silvio Leonardi, *Progresso tecnico e rapporti di lavoro* (Einaudi: Torino, 1957).
[79]*VIII Congresso*, 931–3.

decisive factor for social progress and improving the life and working conditions. The working-class not only encourages and promote it, but it must direct its development and applications as national ruling class.'[80] The working-class had to promote the full deployment of technology and demand shortening of working hours, reduction of prices and increased employment.

Communists attacked the social democrats for denying the class nature of social problems and believing in technocratic solutions. Luciano Lama, then leader of the left-wing Metallurgical Union and later general secretary of the Italian left-wing trade union federation (CGIL), praised the communists for 'fighting vigorously the erroneous conclusion that revisionists drew from the progress of science applied to industry, as if the increase in productivity would bring by itself a transformation of social structures and the end of capitalistic exploitation.'[81] Another Italian communist denounced myth that technology could solve all human problem, which found expression in the propaganda campaign about peaceful nuclear power, 'which no longer separates reality and fantasy.'[82]

4. Harnessing the scientific revolution

In truth, social democrats argued that turning the scientific-industrial revolution into social progress would not come automatically but would require political control. As Jim Griffiths announced to the 1958 Conference:

> We are on the threshold of a new technical revolution. In all our plans this is a challenge to us. We can now get hold of, harness, discipline, guide these tremendous new forces so that the new industrial revolution which is beginning becomes the foundation of a new, a better Britain and not, as was the old industrial revolution, the beginning of the dismal Britain of the nineteenth century.[83]

SPD's Philipp Brück warned that the socialists were too weak to prevent technological innovation from producing unemployment: 'However, a technological revolution does not necessarily lead to a progressive, political and social transformation.'[84] A Labour activist warned that in the 1930s the immense productive capacity of machineries co-existed with mass unemployment and poverty:

> We cannot blame the introduction of the machine for that. But we can blame the respective governments of those times, either because they had no policy whatever to meet the situation, or alternatively they had not the courage to carry their policy through.[85]

Willy Brandt's electoral programme for 1961 shared many themes with the Italian communists.[86] Large enterprises had increased their profits without increasing adequately the income of workers and employees. The government had to ensure that technological progress would reduce prices for consumers and help small enterprises to benefit from modern scientific discoveries as well. Energy policy had to serve the community, not special interests. The goal was to double living standards within a generation. Labour's programme also stressed that monopolies would restrict production and block innovation to increase their profits. Industrial efficiency was the state's responsibility, requiring legislation, financial measures and intervention by nationalised industries.[87] Labour's and PCI's programmes insisted that full employment would stimulate technological innovation, by making it impossible to rely on cheap labour.[88]

Carlo Schmid warned that humanity needed nuclear power – as energy consumption would be eight times bigger by the year 2000 – but it could produce new industrial monopolies with

[80]Ibidem, 957.
[81]Luciano Lama, 'La riscossa sindacale e i compiti del partito', *Rinascita*, September 1959.
[82]Fazio Fabbrini, 'L'importazione dell'americanismo e sue conseguenze per l'operaio', *Rinascita*, October 1955.
[83]LPACR 1958, 89.
[84]Parteitag der SPD 1956, 214.
[85]LPACR 1955, 153.
[86]*Das Regierungsprogramm der SPD* (Bonn: Vorstand der SPD, 1961), 26–8.
[87]Labour Party, *Plan for Progress*, 38–44.
[88]Labour Party, *Plan for Progress*, 28. Luciano Barca, 'Per un programma di sviluppo economico', *Rinascita*, June 1959.

overbearing economic and political power.[89] This would produce 'a new form of slavery' if socialist policies were not adopted. Both SPD and PCI demanded the nationalisation or at least public control of nuclear energy – on the British model – and an independent commission to supervise it.[90]

Warnings against technocracy were common in all three parties. Labour MP Edith Summerskill cautioned against the temptation of leaving all decisions concerning nuclear power to scientists: 'We must not relegate our obvious responsibility to a group within a nation or a small group representing a few nations only.'[91] Revisionist thinker Willi Eichler warned not to leave the question of the Second Industrial revolutions to 'idiot experts' [*Fachidioten]*, but to human beings with a rounded education: 'Socialism is more than rationally run sheep farming.'[92] Mathematician Lucio Lombardo Radice believed that scientific socialism would be attractive to scientists not just for its rigour, but because it offered a general vision of society, while monopoly capitalism turned them into slaves of laboratory.[93] Likewise, Willy Brandt said that the SPD did not need natural and social scientists 'as tools, as technical and scientific coolies,'[94] but as full allies.

Therefore, the three parties actually shared the assessment that a great increase of productive forces was coming, it would have deep social consequences and require political guidance.

5. Misery in an age of prosperity

Where the three parties disagreed was about the social consequences of technological progress and the political implications for their strategy – fundamentally, about the possibility of improving the living conditions of the workers under capitalism.

The communists regularly returned to the theme of intensification of work. Bruno Trentin – later general secretary of the CGIL – said that mechanisation increased productivity, but it also increased the intensity of work as it bound the worker to the rhythm of the machinery.[95] This idea was tied to the theory of labour-value, which envisioned an increase in production only as an increase of the labour subtracted from the workers. Luciano Barca and Adalberto Minucci, two leading communist economists, argued that the new machine was an instrument to 'suck up' more labour from the worker.[96] For another communist, the machinery 'squeezed' sweat, muscles and blood out of the workers – though only under capitalism.[97] After Destalinisation, the communist Mario Montagnana denied that increases in productivity were mostly due to increased intensity of labour – this could not explain an increase of productivity of 300 per cent![98] The workers could ally with employees and technicians, painting monopolies as enemies of progress.

However, just some months after, there was a further correction. After Khrushchev's secret speech and the crushing of Hungary, internal dissent could not be tolerated. For the expulsion of Antonio Giolitti – openly critical over Hungary –, his excessive enthusiasm for technology was used as evidence of revisionism.[99] Montagnana recanted his position and stressed the role of work intensity

[89]Parteitag der SPD 1956, 172. For a similar position of the PCI see Massimo Montagnana, 'Note sul monopolio privato e semplice spiegazione scientifica sulle sue conseguenze', *Rinascita*, January–February 1957.
[90]Lucio Lombardo Radice, 'Ricerca scientifica e progresso tecnico', *Rinascita*, October 1955. Filippo Di Pasquantonio, 'Stato, monopoli e ricerche nucleari in Italia', *Rinascita*, May 1959. 'Entschließung "Die zweite industrielle Revolution"', Parteitag der SPD 1956, 353–5.
[91]LPACR 1955, 108.
[92]Parteitag der SPD 1956, 206.
[93]Lucio Lombardo Radice, 'Lettere al direttore – Le scienze naturali e la battaglia delle idee', *Rinascita*, February 1954.
[94]Parteitag der SPD 1956, 217.
[95]Bruno Trentin, 'Rapporto tra salario e produzione nell'odierna grande fabbrica', *Rinascita*, September 1955.
[96]Luciano Barca and Adalberto Minucci, 'Progresso tecnico, intensità e sfruttamento nelle aziende monopolistiche', *Rinascita*, October 1955.
[97]Arturo Colombi, 'I successi economici e politici della democrazia popolare in Cecoslovacchia', *Rinascita*, June 1957.
[98]Mario Montagnana, 'Preparando il congresso del partito – Per la conquista dei tecnici e per una migliore attività sindacale', *Rinascita*, July 1956.
[99]Luigi Longo, *Revisionismo nuovo e antico* (Torino: Einaudi, 1957), 33–5.

by making a reference to Chaplin's *Modern Times*.[100] The 1956 PCI Congress declared that the greater productivity was mostly due to greater intensity of work and faster rhythms of production, only marginally to new technologies.[101]

However, even German social democrats, including Willy Brandt, were concerned about harshness of work, warning that automatic work could bring more intense efforts on the nerves and the body.[102]

Another issue was whether technological progress meant prosperity. For Western communists, this touched the issue of pauperisation. The increasing exploitation of workers predicted by Marxist doctrine was coming into conflict with growing prosperity in Western European societies. In this period, Italian Communists started to demarcate explicitly from the French communists, who argued that relative and absolute pauperisation were certain and that no improvement could be made under capitalism.[103] Rather than denying it outright, Togliatti and others insisted that economic development produced by monopoly capitalism was uneven.[104] By introducing innovations only in monopoly factories, capitalists increased unemployment, but paid the remaining workers higher wages and benefits. This 'paternalism' allowed the formation of a new proletarian aristocracy allied with the monopolies and separated from the rest of the working-class.[105] Fragmentation reduced the political and trade union power of the working-class. This was not an abstract concern for the communists: employers' harassment of CGIL unionised workers weakened the communist strength throughout the 1950s. However, even Labour activists worried that automation would fragment the working-class, introducing prosperity in the Midlands and leaving behind the North-East.[106] The distribution of the benefits of innovation was a responsibility of political power.

Some German and British socialist revisionists took the opposite line. Not only did they accept prosperity, but they argued that technological development would shrink the working-class, require more engineers and pay skilled workers more. Socialism needed to abandon the centrality of the working-class and embrace the middle classes: 'Modern society will hardly know the worker in the traditional sense. The path of our party is therefore predetermined.'[107] The Labour Party document on automation argued that well paid unskilled jobs could disappear, so it was necessary to expand education, cultivate the potential of every child and create skilled workers.[108] While trying to convince the Labour Party to abandon its commitment to nationalisation, the leader Hugh Gaitskell said that

> the typical worker of the future is more likely to be a skilled man in a white overall, watching dials in a bright new modern factory than a badly paid cotton operative working in a dark and obsolete nineteenth-century mill.[109]

Some argued that material prosperity existed, but it had negative connotations.[110] Willy Brandt warned that 'the intellectually average consumer can vote like a sheep [*Stimmvieh*].'[111] The leader of the Labour left, Aneurin Bevan said: 'It is a meretricious society. It is a society in which priorities have gone all wrong' and 'It is a vulgar society of which no decent person could be proud.'[112]

[100]Mario Montagnana, 'Le condizioni dell'operaio nella fabbrica di oggi – Posizioni errate e discussioni', *Rinascita*, March 1957.
[101]VIII Congresso, 933.
[102]Partetag der SPD 1956, 211. '"Normaler" Urlaub ist nicht genug', *SPD Pressedienst*, P/XII/295, 28 Dezember 1957. *Regierungsprogramm der SPD*, 23.
[103]Montagnana, 'Note sul monopolio privato'. Marc Lazar, *Maisons rouges: les partis communistes français et italien de la Libération à nos jours* (Paris: Aubier, 1992), 106–18.
[104]VIII Congresso, 49, 933.
[105]Agostino Novella, 'Il sindacato nell'azienda e i suoi compiti', *Rinascita*, June 1957.
[106]Werner Best, LPACR 1955, 155.
[107]Parteitag der SPD 1958, 225.
[108]'Interim statement on automation', LPACR 1957, 214–6.
[109]LPACR 1959. The Communists argued that while technological change would require more clerks and technicians, they were actually proletarian, not middle class (VIII Congresso, 832).
[110]Lawrence Black, *Old Labour, New Britain? The Political Culture of the Left in 'Affluent' Britain, 1951–64* (Basingstoke: Palgrave Macmillan, 2002).
[111]Parteitag der SPD 1956, 217.
[112]LPACR 1959, 153, 155.

Social democrats and communists worried that capitalism would only educate the workers to increase their productivity, not develop critical thinking and a rounded personality. Communist intellectual Antonio Banfi said that school should not have just trained skilled workers – 'a school of larvae, not men'[113] –, but used science to cultivate critical thinking and humanism. However, for social democrats, communism had the same dehumanising effect as capitalism. The Bavarian leader Waldemar von Knoeringen warned that Communism 'exhausts itself in a deification of technical progress and political power,'[114] just like Capitalism:

> The economic-technical process of modern civilisation not only makes people slaves to living standards, but servants to the machine world and to anonymous social functionalism. […] The human being, even here, remains the object of all science and technology working on him. Its self-alienation is only strengthened by the means of technical progress.[115]

The Labour Party warned that education needed to produce not just technicians and scientists, but 'enlightened humanists' to understand scientific progress.[116] Children needed to learn 'the habit of scientific thinking', not just scientific facts.[117] Social democrats worried that communist central planning would prove able to increase production and satisfy the material needs of the workers. Democratic socialism could not just compete by offering more material goods, but it had to offer the spiritual benefits of freedom and democracy.[118]

Only education and political participation could lead to full human development and only social sciences helped people understand their living environments. The Labour Party stressed the need to develop quantitative social science to predict and master social developments.[119] Von Knoeringen warned that socialists needed to embrace the future and master it. Strong social interests supported natural sciences, but only the socialists demanded a better understanding of society:

> It would be our undoing to let us be controlled by the tempo of Bolshevism, to simply chase after the expansion of natural science and technology, to believe that whoever sends the biggest Sputnik into space has solved the problems of society.[120]

6. The science-empowered state: peaceful competition and techno-nationalism

In the social democratic and communist discourses, ideas about science were tied not just to the working-class, but the nation state. During this period, social democrats and communists alike came to see the nation-state as their main instrument of political action and imagination – a process sometimes called 'nationalisation of socialism.' Increasing science power meant increasing state power. The drawback was the growing potential for interstate conflict, exacerbated by the Cold War; thus, many imagined new forms of international cooperation, especially, but not exclusively European integration. Peaceful competition was the idea that the two blocs could avoid armed confrontation and prove their superiority through economic productivity, higher standards of life, culture and aid to the Third World. 'The Cold War takes place in the university halls and it will be decided in the university halls.'[121] As von Knoeringen said, the confrontation between East and West would not be about atom bombs, but technology and economy; science would decide the leadership of the world.[122] In 1959, C.P. Snow voiced similar arguments.

[113]VIII Congresso 207.
[114]Parteitag der SPD 1958, 260.
[115]Ibidem, 261.
[116]'Interim statement on automation', LPACR 1957, 215–6.
[117]Labour Party, *Science and the Future of Britain* (London: Labour Party, 1961), 36.
[118]Willi Eichler, Parteitag der SPD 1956, 213. Aneurin Bevan, LPACR 1959, 153.
[119]'Interim statement on automation', LPACR 1957, 214–6. Labour Party, *Science and the Future of Britain*, 28–30.
[120]Parteitag der SPD 1958, 263.
[121]'Letze Chance für Hochschule und Student', *SPD Pressedienst*, P/XII/167, 23 July 1957.
[122]Parteitag der SPD 1956, 202.

Many commentators stressed that science knew no frontier and was a collective effort by and for the entire humankind.[123] However, peaceful competition was strictly linked to the phenomenon Edgerton calls techno-nationalism: the identification of scientific achievements with the nation and the assumption that national economic performance is determined by national rates of innovation.[124] Since statistics of economic growth have been used to measure differentials of power between nations and technological innovation is linked to economic growth, state expenditure in science funding is considered an essential part of strengthening the nation to keep up with the Darwinian struggle.[125]

The Space Race became accepted as the most significant example of peaceful competition. Togliatti said that the banner of social and scientific progress had once belonged to the Western world, but it now belonged to the socialist world.[126] The Italian communists happily repeated the Soviet propaganda that the space achievements proved the superiority of the Soviet system – since science was the product of the system, not the individual genius. In particular, they focused on education[127] and stressed that competition was peaceful.[128]

Not only the communists loved the Soviet Union, but social democrats admired and feared it as well. The USSR served as a positive model of the virtues of economic collectivism, but it was also a threat for its military power and its faster growth; Western countries needed to imitate the socialist world where it excelled – planning, science and education – or they would have been overcome. This was the main point of the 'Sputnik shock.' As the SPD said after the Sputnik's launch: 'Freedom will only withstand testing against impending dangers if it understands the signs of the Second Industrial Revolution and if it adapts with decisiveness its one-sided thinking and actions to the new conditions of the world.'[129] Without planning and state investments, the Western world could not keep the pace with the East.[130] Already East Germany was investing more in science and education than West Germany.[131] Science and education were a central theme for the 1957 election manifesto: 'The new age demands better education and training opportunities for all. Here are laid the foundations of the future life order, our future ability to perform.'[132] This required more investments, more scholarships, building more schools, but also to open universities to students from non-selective secondary schools.[133] 'Every Mark that is invested here is capital for the future.'[134]

The SPD warned that Germany was educating less engineers than the Soviet Union.[135] Leo Brandt warned that Germany would have fallen behind other developed nations: 'The wheel of history has often passed over nations that have fallen back; they mostly noticed very late – too late.'[136] Willy Brandt warned that the German people could not afford to abandon their talents.[137] Revisionist leader Fritz Erler warned that West Germany had enough coal and hydroelectric power, but it needed nuclear power to keep the pace with the other nations.[138] It was not simply Germany: the entire

[123]'Auch Amerika erobert den Weltraum', *SPD Pressedienst*, P/XIII/27, 1 February 1958.
[124]David Edgerton, *The Shock of the Old: Technology and Global History since 1900* (London: Profile, 2008), 106–7.
[125]Jim Tomlinson, *The Politics of Decline: Understanding Post-War Britain* (Harlow: Longman 2000), 12–21.
[126]Palmiro Togliatti, 'Per una sinistra europea', *Rinascita*, March 1959.
[127]Luigi Longo, 'La realtà e l'attualità della prospettiva socialista', *Rinascita*, March 1958. Mario Alighiero Manacorda, 'Una rivoluzione culturale', *Rinascita*, October 1958.
[128]Fazio Fabrini, 'La sfida non è guerra', *Rinascita*, January 1959.
[129]'Auch eine "Nutzanwendung"', *SPD Pressedienst*, P/XII/229, 7 October 1957.
[130]Willi Birkelbach, Parteitag der SPD 1956, 119–20.
[131]'Kein Geld für den Geist', *SPD Pressedienst*, P/XIII/58, 11 March 1958.
[132]*Sicherheit für Alle* (Bonn: Vorstand der SPD 1957), 12.
[133]*Die Mobilisierung des Geistes: unsere Aufgaben in der 2. industriellen Revolution* (Bonn: Vorstand, 1957), 55. Sicherheit für Alle, 12–3.
[134]'Was die deutsche Wissenschaft braucht', *SPD Pressedienst*, P/XIV/222, 1 October 1959.
[135]'Letze Chance für Hochschule und Student', *SPD Pressedienst*, P/XII/167, 23 July 1957. 'Armer, armer Staat!', *SPD Pressedienst*, P/XII/242, 22 October 1957.
[136]Parteitag der SPD 1956, 158.
[137]*Das Regierungsprogramm der SPD*, 33.
[138]Parteitag der SPD 1958, 166–7.

European continent would become backward and impotent in the world stage lest it properly developed its scientific potential.[139]

Education and research were central also for Italian prosperity and prestige. Lombardo Radice wondered whether the country of Enrico Fermi would fall behind[140] – just like the SPD wondered the same about the country of Einstein, Otto Hahn and the scientists of Peenemünde.[141] Lombardo Radice castigated the Italian government for spending a mere 0.1 per cent of the budget on scientific research, many times less than other developed nations. So did physicist Marcello Cini.[142] The communists decried the poor state of scientific high education, the inability to support poor students and the exclusive access to university for students of selective secondary schools.[143]

Italian communists warned that decline in scientific research would put Italy into even worse economic and political subservience.[144] All nations were at a crossroad to determine their future in the new age of nuclear power, but Italy could not even start catching up without spending on research and education.[145] The 1956 PCI Congress supported a comprehensive education reform to produce more skilled workers, engineers and scientists.[146] However, the cultural level of the entire population had to be elevated. Nuclear power was the only way for Italy to keep up with countries possessing traditional energy sources.[147] The failure of the ruling class opened an opportunity for the working-class to lead the nation.

In Britain, the fear of lagging behind was even stronger: Declinism was a dominant theme in British public debates from the 1960s to the 1980s.[148] Labour was eager to exploit it: 'We cannot afford to become an economic backwater.'[149] 'The cold war has been giving way to an intensive economic struggle between the nations of East and West'[150] and Britain was losing the race. Other Western and Eastern European nations had higher rates of growth because Tory policy was limiting production to keep prices and the Pound stable. Labour's policy of planning would allow to achieve industrial expansion, full employment, stable prices and a strong Pound at the same time. Technological innovation offered multiple opportunities for productive investments in fields such as automation, electronics, atomic energy and plastics. However, British investments were lower than the USA, the USSR and West Germany.[151] Ultimately, production depended on science: 'To a very important extent our future prosperity will be determined by what science can discover and by how rapidly we can translate these discoveries into industrial production.'[152] Willhelm Fienburgh MP warned:

> There is the appalling failure of this country to invest enough in research. We are far behind the other nations of the world, and two-thirds of the puny amount we invest in research is wasted away into research into military expenditure.[153]

In the 1958 conference, Harold Wilson warned that, due to Tory policies, Britain had already been surpassed by the USSR and would soon be surpassed by West Germany, Japan and China.[154] The

[139]'Der weinende Dritte (I)', *SPD Pressedienst*, P/XIV/176, 8 August 1959. 'Der weinende Dritte (II)', *SPD Pressedienst*, P/XIV/177, 10 August 1959.
[140]Lucio Lombardo Radice, 'Ricerca scientifica e progresso tecnico', *Rinascita*, October 1955.
[141]'Weltweite Nivellierung der Luftfahrttechnik', *SPD Pressedienst*, P/XII/233, 11 October 1957.
[142]Filippo Di Pasquantonio, 'Conseguenze dell'immobilismo governativo nella ricerca nucleare', *Rinascita*, March 1958.
[143]Gianfranco Ferretti, 'I giovani disertano le facoltà scientifiche?', *Rinascita*, December 1959.
[144]G.L., 'La battaglia delle idee – Un numero di Società sulla ricerca scientifica', *Rinascita*, April 1956.
[145]VIII Congresso, 932.
[146]Ibidem, 957.
[147]Filippo Di Pasquantonio, 'Stato, monopoli e ricerche nucleari in Italia', *Rinascita*, May 1959.
[148]Tomlinson, *The Politics of Decline*, 21–6.
[149]Labour Party, *Plan for Progress*, 11.
[150]Ibidem, 6.
[151]LPACR 1955, 120–1, 156–7.
[152]Labour Party, *Plan for Progress*, 39.
[153]LPACR 1956, 122.
[154]Reference to falling behind these nations appeared regularly (*Signposts for the Sixties*, 14; Labour Party, *Plan for Progress*, 11, 46; Labour Party, *Science and the Future of Britain*, 33–4).

greatest asset Britain had was native talent, to be stimulated through technical education.[155] Britain needed many more people with science education: to staff the new industries, to improve the old industries, to reduce class sizes, to help the people in the Third World.[156] In the Atomic age 'it would be almost impossible for us to spend too much on education.'[157] Germans and Italians were insistent in complaining about the insufficient number of new engineers, but Wilson and C.P. Snow were unrelenting.

British industrial expansion was not simply self-interested: Britain had a duty to offer financial and technical assistance to the Third World, especially the Commonwealth, which was in danger of being seduced by communism[158] – which Italian communists agreed with.[159]

7. The power of science and the responsibility of politics

Social democrats and communists believed in the boundless power of science, but they ultimately trusted politics to build the future. As Willy Brandt said: 'Our future will be the reflection of what we are all ready to do together today, and no one who has goodwill may be excluded.'[160] Carlo Schmid rejected inevitability, optimism or pessimism: everything depended on the people and their will. He called to understand the new factors and work 'with constructive imagination – I would like to say – with scientifically exact imagination [*mit wissenschaftlich exakter Phantasie*].'[161]

In the early 1960s, the highest ideological declarations of communism and social democracy staked their claim to science and the future. The November 1960 international meeting of Communist Parties – the last display of unity before the Soviet-Chinese Split – said that the Soviet Union was a model for building the material and technical basis for communism and starting space exploration. Only socialism could produce these scientific achievements: capitalism impeded technological progress and turned the discoveries of human genius into destructive instruments.[162]

The Socialist International answered to the Moscow declaration with its own declaration of principles, stressing the theme of science:

> In the fifties, it became apparent that the many new scientific discoveries if applied for peaceful purposes, made possible for the first time in history the elimination of hunger and poverty from the face of the earth. The same discoveries, used for military purposes, could cause the end of our civilization.[163]
>
> […]
>
> State action, authorized by democratic decisions, is essential to provide for a rapid rate of economic expansion, a sufficiently high level of investment and the swift application of modern scientific techniques. This involves economic and social planning as a central government responsibility.[164]

The comparison of the two international declarations sums up the comparison of the national parties. Their discourse on technological progress shared many themes: appreciation of scientific progress, need to harness it for the benefit of humankind, the claim to own the future. And yet, these similarities were strictly limited to this field, because the two branches of the labour movement were radically different on the issue of political strategy. For the social democrats, controlling technological progress and turning it into social progress could only be realised by democratic socialists in a parliamentary democracy. The communists denied that the social democrats defended the

[155]LPACR 1957, 142.
[156]Labour Party, *Science and the Future of Britain*, 33–4.
[157]Ibidem, 38.
[158]Labour Party, *Plan for Progress*, 25–6. Labour Party, *Science and the Future of Britain*, 20.
[159]Cesare Luporini, 'La scienza e il destino umano', *Rinascita*, December 1959.
[160]Das Regierungsprogramm der SPD, 34.
[161]Parteitag der SPD 1956, 180.
[162]*Statement of 81 Communist and Workers Parties Meeting in Moscow, USSR, 1960* (New York: New Century Publishers, 1961).
[163]'The World Today: The Socialist Perspective' (1962), quoted in Braunthal, *History of the International*, 552.
[164]Ibidem, 554.

workers' interests, which could not be asserted under capitalism and bourgeois democracy. While their ideas about the future and the technical instruments to reach it were similar, the political road was very different.

Therefore, there was a major difference in the transnational movement of ideas. Ideas could be exchanged reciprocally among peers of equal dignity – horizontal transnationalism – or could descend one-way from an external source – vertical transnationalism. For an idea to become transnational, it needs to be flexible enough to be taken out of its original context and made communicable. Ideas concerning basic political principles were less flexible and could only circulate among ideologically similar organisations – whether social democrats or communists. Ideas about science could circulate horizontally or vertically even among ideological rivals. Thus, German social democrats borrowed the imagery of the Sputnik, while Italian communists lauded the British scholarship system.

These spatial metaphors should not disguise the agency of actors: circulation of ideas about science was maybe frictionless, but not automatic.[165] The term 'Scientifically exact imagination' implies an active process: these ideas about science were building blocks that politicians and intellectuals used to create a vision of the future that embodied their ideals and could be sold in the contest of political ideas. Celebrating science was not exclusive to social democrats, but the science liberals and conservatives envisioned was modelled on a free-market ideal society where order emerged spontaneously through the interaction of free, rational actors – as skilfully articulated by Michael Polanyi.[166] Social democrats and communists were more in line with Bernal: state direction was essential for the advancement of science and the fulfilment of its social responsibilities.

Politicians and intellectuals picked these transnational ideas and adapted them for the local environment. These ideas were flexible and open-ended, but they had to be modified not just to fit national conditions but partisan purposes. Sometimes these ideas needed to be substantive to shape policy, but sometimes they needed to serve tactical deployment in the battlefield of ideas – opposition politicians used the success of Soviet education either to build a new policy or to craft an attack to the government.

The speech of Barbara Castle at the Labour Party conference in 1959 is a perfect example of the process described in this article: how politicians took transnational ideas and repurposed them to local conditions and local goals. Castle employed examples from the Soviet Union and Britain to build an argument in favour of public direction of the economy, challenging alternative visions of conservatives and socialist revisionists:

> No, comrades, it simply won't wash to say that nationalisation is fusty and out-of-date. What are the typical symbols of this modem age? Russia's nationalised sputnik now circling round the moon tracked at every stage by Britain's publicly owned radar telescope at Jodrell Bank.[167] The Hovercraft – the most revolutionary development in transport – sponsored by the National Research Development Corporation which you and I own. Nimrod, the giant atom-smasher now being built next door to Harwell – another product of national enterprise. Contrast these leaps into the new world with the fumbling inadequacies of our machine tool industry whose total failure to meet our needs has just been exposed in an official report the Government dare not let us see
>
> […]
>
> We can no more win the battle of nuclear power, electronics and automation on the principles of laissez-faire than we could have won the last war on the same principles. Nor can we win the battle against world poverty or the fight for peace[168]

Today this enthusiasm seems exaggerated or naïve; the comments about the peaceful use of nuclear power are especially ominous. Should we follow Hartog and confine futurism among the antiquarian

[165]Norman Fairclough, *Critical Discourse Analysis: The Critical Study of Language* (Harlow: Longman, 2010), 72–73.
[166]Wolfe, *Freedom's Laboratory*, 82–83.
[167]See Jon Agar, *Science and Spectacle: The Work of Jodrell Bank in Post-War British Culture* (London: Routledge, 1998).
[168]LPACR 1959, 86.

curiosities of mid-twentieth century? This debate is more relevant than ever, with science ever more important and expectations about technological change ever more ambiguous. Utopian impulses and dystopian fears shaped the imagination then as now. Futurism was never uncritical: objections to the 'deification' of technology are the germs of the criticism of technological society and modernity in the 1970s. Some of the topics discussed in this article are still talked about today: technological unemployment, educating young people to new technologies, technology making us uncritical or complacent, reconciling big technological monopolies with democracy.

A sweeping narrative about futurism and optimism explains little; specific visions of the future were defined by the ideas making them possible and the actors embracing them. In this case, I have shown that the optimistic vision of the future depended on a certain conception of science, which in turn aligned with the self-identity of the workers' parties. It is on this partisan vision of science that we must concentrate to understand the political and intellectual history of social democracy and communism in the post-war era.

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