The First World War and Health

Rethinking Resilience

Edited by

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BRILL

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Death from the Air: The Resilience of Modern Society Militarily Put to the Test, 1900–35

Wim Klinkert

1 Introduction

On 30 September 1924, for the first time ever, the Dutch population was able to listen to a live radio broadcast of a public debate, an event for which the press had warmed up the general public for weeks on end. At the invitation of the left-liberal *Vrijzinnig Democratische Bond* (Liberal Democratic Union: VDB), First Chamber MP, Professor David van Embden (1875–1962) crossed swords with General (Ret.) Cornelis Snijders (1852–1939) at the Hague Zoo.¹ A prominent VDB member, van Embden, a professor of Economics at the University of Amsterdam, had been moulding his party to follow the social democratic example of striving for unilateral disarmament. He believed that the recent World War had shown that a hostile air force could completely annihilate societies in the blink of an eye, any resistance being illusory. His passionate expatiations that an air raid with gas and fire bombs on cities, causing countless victims, would be the opening phase of the next war, had given him nationwide renown.² According to van Embden, the deadly combination of military aviation and chemical war agents had changed warfare dramatically, in that it deliberately targeted civilians, making warfare legally and morally unacceptable in the process. He regularly used the term “murder”.³ For months the Dutch papers abounded with articles on the destructive power of the next war, which would devastate cities and gas the populations. For van Embden’s supporters, Snijders was militarism personified, because he believed in costly strong armies to protect the people. Snijders posited that van Embden portrayed a barbaric picture of the future, completely out of touch with military reality, nothing short of demagogic fear mongering. According to the general, however, 1914–18 had shown that countries could be spared the scourge of war

1 Until 1943 The Hague housed a zoo, presently the location of Province Hall.

2 For instance, in the Upper Chamber of Parliament, on 23 April 1924. His pamphlet, *Nationale ontwapening of volksvedelging*, published in June 1924, was a great success.

3 The Dutch Catholic daily *De Tijd* called the German Zeppelins that attacked British cities on 20 January 1915 “murderers from the sky (...) that kill peaceful citizens in the most horrendous way”: my translation.

if they were prepared to forcefully defend their neutrality. Besides, should war come, enough means had since been developed to safeguard the population effectively against air and gas raids.⁴

In the event, there was hardly any debate at all, as the general was continually being interrupted by loud heckling from the audience, making any exchange of views virtually impossible. Snijders took his cue from this and henceforth declined to take part in such debates,⁵ while the VDB definitively decided to steer a course of unilateral national disarmament.

The Dutch radio debate of 1924 epitomizes the emotions and polarization that dominated the discussion on civilian vulnerability in the 1920s and 1930s. It was the first serious challenge on modern societies to show their resilience in the face of technological military threats. No doubt the emotions sprang from recent war experiences, but the spectre of the defenceless civilian in the face of the destruction wreaked by modern technology, harks back further. Apocalyptic impressions of the war of the future featured in pre-1914 popular science fiction literature. It was the reverse image of the optimism of progress, and revealed the vulnerability of modern societies. The present chapter attempts to sketch a picture of the ideas about attacks from the air on civilians, from the first, popular predictions of the future, via their actual execution, up to their incorporation into formal military doctrine. What was the context in which these attacks on population centres were envisaged? How were they evaluated and justified? Did they lead to measures to increase public resilience? The end point of this overview is the Italian air raids with chemical agents on Ethiopian villages and towns that began in December 1935.⁶ They seemed to confirm van Embden's spectres, and inspired John Fuller, the prominent British military thinker (1878–1966), to write *Towards Armageddon*.⁷ The year 1935 was also the time in which *Der Totale Krieg* was published, a much discussed book, by German General Erich von Ludendorff (1875–1937), who, amongst others, foresaw large air fleets conducting the war of the future, with the inevitable civilian casualties.⁸

4 At the same time, Winston Churchill, Chancellor of the Exchequer, wrote an essay on the destructive effect of technological progress on society: www.winstonchurchill.org/publications/finest-hour/finest-hour-094/shall-we-all-commit-suicide/ (accessed 18-12-2017).

5 *Nieuwe Rotterdamsche Courant*, 1 October 1924. After this, the military arguments were put forward by the artillery officer Abraham Johannes Maas (1883–1939), see *inter alia*: *Algemeen Handelsblad*, 2 December 1924; and *Het Vaderland*, 31 March 1930.

6 Grip and Hart, 'The use of chemical weapons in the 1935–36 Italo-Ethiopian War'.

7 Published in London in 1937. At the same time others also pointed to the destructive character of modern warfare: Kennedy, *Modern War*; Charlton, *The Menace of the Clouds*.

8 Ludendorff, *Der Totale Krieg*, p. 96.

2 The “Knockout Blow”⁹

The earliest ideas about bombing cities from the air flowed from the quills of novelists.¹⁰ The then fast-growing popularity of air balloons and airships inspired visions of the future, in which, for the first time in history, danger came from the air. *Hartman the Anarchist* from 1893 was probably the first novel with this as a theme, written by Edward Douglass Fawcett (1866–1960), novelist and aviation enthusiast. Fawcett describes the fate of London, reduced to one gigantic ruin in the course of a day by an airship. Of much greater significance, though, towering high above all his competitors, was the man, who was able to turn the vulnerability of the large, modern city in the face of war violence, into a global theme: Herbert George Wells (1866–1944). This celebrated author, and activist, combined science fiction with social criticism, not only in his novels, but also in well-argued essays and non-fiction works on technological developments. In his blockbuster story *The War of the Worlds* (1898),¹¹ it was still aliens that wreaked havoc, but ten years later, in *The War in the Air*¹² German airships reduce New York to piles of rubble, unleashing the destruction of cities the world over. In the words of the author, “The catastrophe was the logical outcome of the situation created by the application of science in warfare. It was unavoidable that great cities should be destroyed”. In his book, Wells drew his readers’ attention to the vulnerability of the modern city and the downsides of technological progress, themes that were embraced by the military and pacifists alike. The all-destructive air raid on civilians would feature prominently in the ideas of both these groups over the coming decades. Critics in 1900 predominantly considered the book as a warning for the future, and as an appeal to jurists to better enshrine the protection of civilians against war violence, in concert with the massive publicity around the Hague Peace Conferences of 1899 and 1907.¹³

Wells also published non-fiction, such as *Anticipations* in 1901, even before the Wright brothers’ first flight, in which he discussed the new century’s technological progress in a wide range of areas. In warfare he foresaw that combatants would pay the price, with their protection becoming increasingly

9 Holman *The Next War in the Air*.

10 In the past, the bombing of cities was done by navies. The Royal Navy bombed Copenhagen in 1807 (200 civilian deaths), played an important part in the attacks on American cities in 1814, and bombed both Odessa (1854) and Canton (Guangzhou) (1856).

11 Discussed in *Rotterdamsch Nieuwsblad*, 12 October 1899.

12 Soon translated into French (*La guerre dans les airs*) and German (*Der Luftkrieg*).

13 Discussed in the Dutch press: *De Grondwet*, 8 September 1903 and 9 August 1907; *De Telegraaf*, 9 November 1908; *De Zuid-Willemsvaart*, 28 November 1908.

more problematic. He predicted a prominent military role for dirigible balloons and in the future also “airplanes”, and developed concepts such as “command of the air”¹⁴ as an important pre-condition for military victory. As well as this, he pointed out the growing vulnerability of the land behind the front, where nothing and no one would be safe.¹⁵

Wells’ books were discussed all over the world. What is striking is the reaction of the most famous pre-1914 pacifist, Nobel Peace Prize laureate Bertha von Suttner (1843–1914). In her book *Die Barbarisierung der Luft* from 1912, she concurred with Wells in stating that war will lead to severe societal disruption. In her eyes this alone justified an appeal for a ban on the development of armed aviation. In the spirit of Wells she wrote, “Die erste Aufgabe der deutschen Flugzeuge ist nichts anderes als das Bombardement von Paris, durch das gleich zu Beginn der Feindseligkeiten die Bevölkerung und die Heere beider Länder in ihrem Geist und in ihrem Gefühlen beeinflusst werden sollen”.¹⁶

In France, Clément Ader (1841–1925), an electro-technical engineer, was the most prominent military aviation pioneer. In 1910 he published *L’aviation militaire*, an influential book that lies at the basis of military aviation, launching the idea of the aircraft carrier. In his chapter “Thème de Paris” he analysed France’s vulnerability, in particular Paris, in the face of air raids, and he gave the initial impetus to setting up an air defence. He also did not exclude the possibility of a surprise attack on the French capital.¹⁷

Finally, in Germany, Rudolf Martin (1867–1930) advocated the military development of aviation, which he saw as the only possibility for his country to realize and sustain its position of dominance on the European continent in the long run.¹⁸ In 1907, Martin explained this in *Das Zeitalter der Motorluftschiffahrt*, and he elaborated it in a Wellsian scenario a year later in *Stehen wir vor einem Weltkrieg* (Are we on the brink of a World War?), in which Germany’s command of the air brought her victory.

14 The term ‘command of the air’ dated from 1896, coined by the Italian military engineer at the time, Tomasso Crociani.

15 Wells, *Anticipations*, pp. 69–83.

16 Von Suttner, *Die Barbarisierung der Luft*, p. 21: The first task of German aeroplanes is nothing else but the bombardment of Paris right at the beginning of hostilities, in order to influence, in mind and feeling, civilians as well as the armies of both nations: my translation.

17 In 1887, the Italian Giuseppe de Rossi had already published on military use of the air in *La locomozione aerea*.

18 Höhler, *Luftfahrtforschung und Luftfahrtmythos*.

3 The First Experiences of Destruction

In August 1914, Europe went up in flames. Millions went to war and before the first year was out, it had become clear to all the world that this war exceeded the limits of violence which had hitherto been held impossible. Thus, the Amsterdam paper *Algemeen Handelsblad* concluded on 8 May 1915: "The war with bombs on undefended places, arrows¹⁹ thrown from airplanes, with poisonous gases and submarine attacks on passenger ships, the reality of this war is becoming more gruesome and criminal by the day".²⁰ Three days later *Nieuwsblad van het Noorden* wrote: "What Zeppelins and airplanes are doing at the moment is new: throwing bombs on the defenceless, open cities, where non-combatants again become the casualties ... Mankind shivers, and believes this cruelty cannot be surpassed. Still, the belligerents will try to do so. For, after all, what is war other than large-scale murder".²¹ These comments came from an unimpeachable authority: the civilian press of a neutral country which had stayed out of the fray and therefore could report in relative freedom.

The first war year, and especially the first six months of 1915, indeed showed a number of remarkable steps in the escalation of violence, at sea, on land, and in the air.²² On land, February saw the introduction of the flamethrower, while in March, near Neuve Chapelle on the Western Front, the first modern trench battles, which were to dominate the image of the war over the coming years, were fought. The hand grenade, the trench mortar, and the steel helmet were also introduced in 1915. Much more dramatic, of course, was the first poison gas attack near Ypres on 22 April of that year. That this was not just another new weapon, but essentially a new step in technological warfare, is clear from the above press quotes.

At sea, it was the torpedoing of the *Lusitania* by a German submarine on 7 May that drew the most attention. The torpedoing itself was not the most decisive factor in this, but rather the fact that this was a civilian vessel of a neutral state (the United States). As such, the attack constituted a flagrant violation of the law of war, directed against civilians, almost 1,200 of whom lost their lives.²³ Together with the large-scale destruction of villages and towns, the murder of thousands of civilians in Belgium by the German army in August-September 1914, and the execution in Brussels of British nurse Edith Cavell

19 *Fliegerpfeil* or *flechette*.

20 *Algemeen Handelsblad*, 8 May 1915: my translation.

21 *Nieuwsblad van het Noorden*, 11 May 1915: my translation.

22 Preston, *A Higher Form of Killing*.

23 Jasper, *Lusitania: Kulturgeschichte einer Katastrophe*.

ILLUSTRATION 2.1
The horrors of the flame thrower.
Drawing by Arthur Stadler

on suspicion of espionage in October 1915, the *Lusitania* is one of the pivotal events of the early war years. There was also the first eruption of the genocide on Armenians in the Ottoman Empire during April-May 1915.²⁴

Moreover, 1915 saw the birth of the strategic air raid: the use of aircraft against targets (far) behind the front to undermine the capabilities and the will of the enemy to continue the war.²⁵ It came close to the more recent fantasies of authors, but until this time it had not been part of military doctrines, as the technical means to carry out such raids were still absent. It was this tactic, that reached its apogee in the Second World War, which turned civilians into war targets in great numbers. This is not to say that strategic bombing is exclusively directed at civilians as a primary target; the sustainability of the enemy, his economic and military potential, is the prime focus, but it is hard to isolate the

²⁴ www.niod.nl/sites/niod.nl/files/Armeense%20genocide.pdf (accessed 18-12-2017).

²⁵ Jones, *The Origins of Strategic Bombing*; idem, *The Beginnings of Strategic Air Power*.

civilian from it.²⁶ The term ‘terror bombardment’ to describe an attack in which a high number of civilian casualties is the explicit objective, and whose direct military effect is doubtful, only harks back to the Second World War.

In the second month of the war, September 1914, the British air force already operated over Germany to attack airship hangars. These raids mainly had a symbolic and propagandistic effect, and there were hardly any casualties. Until 1918 there were no strategic air raids of any size worth mentioning against the enemy hinterland, mainly due to the distance to German territory. For the French this was different, and their raid on 4 December 1914 against Freiburg in the Black Forest, was a first attempt to destroy troop concentrations and military infrastructure behind the frontline. The *Groupe de bombardement no.1* operated from Nancy, and was the first air force unit specifically dedicated to this purpose in history.²⁷ After Freiburg a great number of industrial cities were targeted, from Cologne to Ludwigshafen, Mannheim, and Saarbrücken. The large BASF and Mannesmann works, for instance, were repeatedly attacked by the French. They cost the lives of 740 Germans, most of whom perished in 1918.²⁸ The damage to German industrial capacity consisted mainly of man hours not worked and morale – workers who were afraid to return to work – rather than material destruction caused by aerial bombs.

Two days after the German army had invaded Belgium on 4 August 1914, a Zeppelin dropped the first bombs on the city of Liege, killing nine people. Later in the campaign, the city of Antwerp was bombed and the Germans focused on Dover, to disrupt the transports to the continent, and on Paris (on 13 and 30 August 1914). All this had still been very small-scale and hardly made an impact on the fighting, but the German Navy, which viewed England as its most important opponent, believed in a more large-scale and systematic use of air raids. Naval staff officer Paul Behncke (1869–1937) was the first to emphatically champion the bombing of cities in formal policy documents, mostly for its supposed great effect on the morale of the population.²⁹ In January 1915, after another successful series of British raids, Behncke finally won Kaiser Wilhelm II over, and on the night of 19 and 20 January the first German Zeppelin raid on

26 See, for instance, the arguments given for the British bombing of German cities in February 1942 (Directive 22) and for the American attacks against Japanese cities from June 1944 (Operations Matterhorn and Meetinghouse).

27 Boyne, *The Influence of Air Power Upon History*, p. 91; Morrow, *The Great War in the Air*, pp. 97–8, 132.

28 Geinitz, “The first air war against non-combatants”, pp. 207–26.

29 Paris, *Winged Warfare. The Literature and Theory of Aerial Warfare in Britain*, p. 133; Heuser, *The Bomb*, p. 38.

London took place.³⁰ In that year the German Navy carried out 20 raids, costing 181 British lives. The raids caused panic in London, and counter-measures were not long in coming, both in the shape of black outs and ways to take the big, clumsy air ships out. The latter could be done with artillery from the ground, or, more effectively, with attacks from aircraft. These counter-measures, and the inherent difficulties with the air-maneuvrability of the Zeppelins themselves, forced the Germans to look for other tactics. From 1916 onwards London was mainly attacked with aircraft (Operation *Türkenkreuz*) by the so-called *England Geschwader*,³¹ the first German unit consisting of aircraft dedicated to attacking hostile cities. Commanded by Ernst Brandenburg (1883–1952), the unit operated from the vicinity of Ghent in occupied Flanders. If, for mechanical or atmospheric reasons, London could not be reached, the aircraft attacked targets of opportunity on the British coast. The deadliest attack of all took place on 13 June 1917, killing 162 civilians, including 18 children, when a primary school was hit. Brandenburg received the highest German distinction, but in England reactions were furious. Two days later the *Daily Mail* published photographs of the children killed by the German bombs and added a reprisal map of German cities.³² On 30 June a protest rally was organized in London against the German “child murderers”, during which liberal MP James Hogge (1873–1928) called for reprisals against Germany. According to the extremely pro-Allied Amsterdam *De Telegraaf* newspaper, Hogge had said, “The more misery that can be brought to bear on German women by throwing bombs at them, the sooner they will experience what it means to see the bits of flesh of their children hanging on the walls, the sooner the German people will be convinced of the uselessness of the cruelties in the war against the civilian population”. The protesters adopted a declaration calling for “continuous reprisals”.³³ At first, the British government did not heed the appeal, and for the time being mainly focused on bombing the German air and naval bases in Flanders, but that was to change in 1918.³⁴

In fact, Hogges’ appeal came rather late in the day, for revenge as a motive for targeting civilians had already been introduced on the Allied side when, in June 1915, the French had bombed the city of Karlsruhe in reprisal for German

30 Castle, *The First Blitz*; Hanson, *First Blitz*.

31 Officially named the *Kampfgeschwader der Obersten Heeresleitung* 3.

32 Biddle, *Rhetoric and Reality in Air Warfare*, p. 30.

33 *De Telegraaf*, 18 June 1917: my translation.

34 For years, airfields, Zeppelin installations, and coastal defence works in Flanders were bombed, costing about 100 Belgian civilian their lives.

ILLUSTRATION 2.2
(Aerial) bombardment. Drawing by
Hans Slavos

air raids on Verdun, Nancy, and British cities.³⁵ *De Telegraaf* called this attack a useful lesson for the “shameless and wanton murder of old people, women and children by German Zeppelin raids on British seaside towns and residential areas that serve not a single military purpose”.³⁶ The vicious circle of reciprocal revenge and reprisal had begun.

The German attacks on London continued until August 1918, although no attacks had been carried out by aircraft since May of that year, with Zeppelins being deployed again in the last months of the war. In all, 1,392 British lives were lost as a result of German attacks with airships and aircraft. On the German side the attacks had strengthened the belief that they could work, provided they were large-scale and destructive enough. Naval officer Peter Strasser (1876–1918) had shown himself to be the most vociferous advocate of attacks on England, being convinced that only attacks on industrial and civilian targets could bring a decisive result in modern war.³⁷ He is also associated with the development of the incendiary bomb (*Elektronbrandbombe*), with which the German army had experimented since 1915. In 1918, enough of these bombs

35 Unfortunately, a circus was bombed during a matinee performance, attended by many children: Fegan, *The Baby Killers*.

36 *De Telegraaf*, 19 June 1915.

37 Lawson, *The First Air Campaign*, pp. 79–80.

could have been produced to reduce both Paris and London to ashes in a single massive air raid. It is unclear, however, to this day, whether the military and civilian authorities supported the execution of this idea.³⁸

The German air raids during the war years, and the extensive experience with air defence and air protection, stimulated British thinking on the role of the air arm. Jan Smuts (1870–1950), a member of the War Cabinet, drew up elaborate reports on the order of the government, which eventually in 1918 resulted in the establishment of the first independent air force in the world, the Royal Air Force. This boasted a unit exclusively tasked with carrying out strategic attacks on cities, called the *Independent Force RAF*. From France this unit launched air raids on German industry, railways and airfields in 1918. The effect of these attacks on German war production was modest, but the British air force gained valuable experience. The planners also saw the importance of the morale of the German people, but it seems unlikely that a deliberate campaign on cities to weaken it was ever staged.

After 1914 the skies over Paris had been relatively quiet, and the Germans did not resume their air raids on the French capital until January 1918. According to the German press this was a reprisal for the French attacks on German cities. From March onwards the air raids not only intensified, forcing the French to seek shelter in metro stations, but they were also complemented by long-range artillery bombardments (*Paris Geschütz/Pariser Kanone*).³⁹ During this time 256 Parisians lost their lives in the raids, which stopped at the end of July. French newspapers also called for reprisals against German cities.

Two aspects of the strategic bombardment deserve further attention. First, there was the destruction of places of cultural interest. Already in the first war year, Europe had reacted in shock to the deliberate destruction of the university library and the medieval old town of Louvain and the targeting of Rheims Cathedral, both perpetrated by the German army. From May 1915 Venice would be added to this list of cultural targets.⁴⁰ The city was the first target Austrian aircraft chose immediately after the Italian declaration of war; these raids were to continue until the very end of the war. On 24 October, Austrian aircraft destroyed the dome of Santa Maria degli Scalzi, containing frescoes by Tiepolo. In 1916, after Santi Giovanni e Paolo and Santa Maria Formosa had been hit, and a bomb had landed only yards away from the facade of San Marco,

38 Hanson, *First Blitz* 406–14; Ludendorff, *Meine Kriegserinnerungen*, p. 565.

39 Invented by Fritz Rausenberger (1868–1926), engineer of the Krupp works.

40 In 1849, Venice was the first city bombed from a balloon, also as part of an Austrian attack. Bombing from balloons was invented by the Austrian military engineer Franz von Uchatius (1811–61).

thankfully a dud, the pope called for an end to the bombings.⁴¹ Austria riposted that Venice lay in the direct vicinity of the front and, like many other north Italian cities, possessed a militarily important infrastructure. Seen from this perspective, the 42 air raids were no different from those against Padua, Verona, and Milan. However, the raids on the latter cities were considerably less frequent. The deadliest Austrian raid took place on 11 November 1916 on Padua, when a bomb hit a shelter in the ramparts, killing 93 civilians. In total, the raids cost the lives of 400 Italian civilians, and even in Naples people were killed when a Zeppelin that had taken to the air in Bulgaria dropped its deadly payload on the city in 1918. The Italian air force responded in kind between 1916–18 with air raids on Trieste, Fiume (Rijeka), and Laibach (Ljubljana) by Cardoni bombers.

The air raids, or the threat of them, became part and parcel of war rhetoric. H.G. Wells made a first contribution towards it in a sensational interview in the *Daily Express* of 23 June 1915, in which he declared that the fastest and cheapest way to end the war was a massive air raid. He proposed the destruction of the town of Essen, the heart of German war production, harbouring the Krupp arms factories with a thousand aircraft.⁴² When in January 1918 the Conservative MP and air force enthusiast William Joynson-Hicks, made a more or less similar appeal in the *Daily Telegraph* – bombing the Ruhr area on a daily basis until the Germans capitulated – German propaganda in turn used the opportunity to point out the criminal character of the British war effort.⁴³ In the Second World War Essen was to be the heaviest bombed city of Germany.

4 Two War Prophets: Alphonse Séché and Frederick Lanchester

The change in the nature of warfare, especially due to the introduction of the air arm, had not gone unnoticed in widely divergent circles soon after 1914. Two authors of very different backgrounds bear witness to this: the French poet, theatre critic, and author Alphonse Séché (1876–1964) and the British engineer Frederick Lanchester (1868–1946). In spite of their different perspectives, they both arrived at the conclusion that civilians would be the main victims of the wars of the future. Séché had made a name for himself in the Parisian literary world, and when the war broke out, he began staging plays for the soldiers at the front (*Théâtre aux armées*). He also showed himself an

⁴¹ *Het nieuws van den dag voor Nederlands-Indië*, 13 November 1916.

⁴² Morrow, *The Great War in the Air*, p. 120.

⁴³ Paris, *Winged Warfare*, pp. 168–69.

enthusiastic supporter of the French commander-in-chief, Joseph Joffre (1852–1931), and a wholehearted champion of the French war effort, both orally and in writing. As early as March 1915 he published his remarkable book *Les guerres d'enfer*, in which he argued that the nature of the war of the future would involve everyone. All professions, and both men and women, would have to be part of the national war effort, whether at the front or behind it. After all, Séché reasoned, the war was not only a military, but also an economic, technological, intellectual, and ideological struggle for national self-preservation. In his view, organizing this struggle for national survival was the most important task for the state, and this justified interfering deeply into the lives of its citizens. From this it followed that the distinction between combatants and non-combatants was irrelevant; by definition, every citizen was also a *soldat* (soldier) and the front was everywhere, a realization that had been considerably reinforced by the advent of aviation.⁴⁴ According to Séché, France should have invested much more heavily in it, as Clément Ader had already suggested. Aviation rendered everything and everyone vulnerable, and that was something a country could not afford. It was one of the manifestations of technological progress that made the struggle tougher, more cruel, brutal and deadly, something France should prepare for. Whether it was entirely due to Séché is difficult to say, but the idea of war as a national effort involving the entire population, whether in uniform or not, became quite popular in France.⁴⁵ In November 1917, for instance, Prime Minister Georges Clemenceau (1841–1929) advocated the *guerre intégrale* (integral warfare). In Parliament he declared that every Frenchman, woman or child, was a *poilu* (nickname for French First World War soldiers), who was expected to fully commit himself/herself to victory, regardless of hardships and shortages. There was no other recipe for ultimate victory. Six months later, Léon Doudet (1867–1942), a writer in Séché's circle, published his *La guerre totale* (total warfare), introducing a term that stuck as it so aptly described the war experience.⁴⁶

Frederick Lanchester regarded aviation from a technician's perspective. From his childhood, he had been into engines and cars, for which he even set up a factory.⁴⁷ However, his heart was in aeronautics. In this field he grew to become one of the most prominent experts in England. Together with Geoffrey

44 Legal support for this opinion was provided in 1923 by Jean Bouruet Aubertot in *Les bombardements aériens*.

45 The idea that war was fought through economic and ideological means as well, was not new, but the reality of 1914–18 surpassed all previous expectations.

46 He had already used the term in March 1916 when he published the article "Une guerre totale: eux ou nous" (A total war, them or us) in *L'Action Française* nr. 71, 11 March 1916.

47 He invented disc brakes, the carburettor, and the accelerator pedal.

De Havilland (1882–1965) and Alliott Verdon Roe (1877–1958), he was the founder of British military aviation. He proved an original thinker, both in the field of aerodynamics and the development of ‘operations research’, which formed the basis for the planning and target selection for air raids. In 1916 he published his most important book *Aircraft in Warfare*, an exploration of the war of the future, in which air forces played a dominant role in size, range, and fire power, and also at sea from aircraft carriers. An enemy should be destroyed from the air so thoroughly that a land war could be avoided. This would make a ‘bloodless victory’ possible, although that would of course not be the case for those who happened to find themselves in the areas from which the enemy operated and which needed to be destroyed. Lanchester did not believe in the Zeppelin, a bad gamble he believed the Germans would turn their backs on sooner or later, but he was convinced that air raids on large cities would become a routine feature of warfare, precisely because all (military) headquarters were located in these cities. As the nerve centres of warfare, they were legitimate targets, their functioning being critical in warfare. He also advised moving important naval and air bases to the safety of northern Scotland or Ireland. On one count Lanchester erred considerably: he believed that aviation would never gain any significant commercial importance, with the possible exception of the transport of mail.

5 A Horrific Future? Resilience Takes Shape

Although the armistice of 11 November 1918 silenced the guns, the thinking about the war of the future continued as before. From 1914 onwards the European civilian population had suffered on an unprecedented scale from destruction, deportation, and sea blockades, which had led to widespread famine and malnourishment. In all probability, the British maritime blockade of Germany alone may have cost the lives of 800,000 people.⁴⁸ An estimated 60 million European citizens had been in uniform.⁴⁹ Due to the newspapers, photography, and film the devastating power of these new weapons was widely known, even to those who had not experienced the war first hand. After 1918 there was hope and optimism that such horrors would lead to repentance and contemplation: no more war! Yet, there was the cold reality of ever-progressing (arms) technology and of permanent, sometimes smouldering conflicts. The Dutch radio debate of 1924 between General Snijders and Professor van

48 Roerkohl, *Hungerblockade und Heimatfront*; Müller, *Kohlrüben und Kälberzähne*.

49 Liddle ed. *The Great World War 1914–1945*, vol. 2; Proctor, *Civilians in a World at War*.

Embsden reflected the European hope of peace and fear of an even more violent future. Civilians were acutely aware of their own vulnerability, with their lives increasingly dependent on blackouts, shelters, and air defence, which by now had become all too familiar for millions of Europeans. Germany and Austria had built up their *Heimatluftschutz*,⁵⁰ the British had created their own very elaborate air defence systems around London,⁵¹ and even in neutral countries air defence measures had been put in place.⁵² Unfortunately, we know too little of the effect of these measures on the sense of security among the population.

A number of insights on the future of warfare can be discerned in most European countries. First, there is the importance of morale. In the first instance, this concerned the morale of the soldiers in the face of ever-increasingly deadly weapon systems on the battlefield. These hardships required strong morale, and a psychological frame of mind that could cope with these extreme circumstances, something reflected in the military doctrines of various countries. The psychological effect of bombings on civilians had already been the subject of research during the war. The German psychiatrist Alfred Hoche (1865–1943) – (in)famous for his co-authorship in 1920 of the book *Die Freigabe der Vernichtung Lebensunwerten Lebens* (Allowing the destruction of life not worth living) – had become fascinated by it and had published on the subject. At the start of the Second World War, psychiatrists and doctors would address the issue again based on the experiences of 1914–18 and the treatments developed during the inter-war years.⁵³

A second insight relates to the nature of modern warfare. The years 1914–18 had shown the world that societies, not armies, were fighting each other. Industry, ideology, and a cohesive social structure were of crucial importance to generate an effective war effort. Not a single civilian would be able to escape from making a contribution to the war effort, and for many this automatically justified his/her role as a target of hostile action.⁵⁴

50 Napp, *Die deutschen Luftstreitkräfte im Ersten Weltkrieg*, p. 266.

51 A central figure in London air defence was Edward Ashmore (1872–1953): Cole, *The Air Defence of Britain*; www.airdefence.org/ (accessed 19-12-2017).

52 Klinkert, Kruizinga, Moeyes, *Nederland neutraal*, pp. 109–10. In France, Raymond Grenouillet organised civilian protection against air and gas attacks in the 1920s.

53 See the *British Medical Journal* and *Lancet* in 1939 and 1940; Gillespie, *The Psychological Effect of War on Citizen and Soldier*; Mackintosh, *The War and Mental Health in England*.

54 Bernard Serrigny (1870–1954) a member of the *Conseil supérieur de la Défense nationale*, in “L’organisation de la nation pour le temps de guerre”; Porte, “Mobilisation industrielle et guerre totale: 1916, année charnière”, pp. 26–35.

The war of 1914–18 had also been an engineers' war, a technological struggle. New weapon systems, such as the tank, the submarine, the airplane, and gas had made their entrance, and it was expected that their role would only increase. For civilians, the airplane in particular proved to be a real danger. So far, they had not been exposed to gas, as this had been technologically unfeasible during the war. Gas was a battlefield weapon, used by opening cylinders or firing artillery shells, and although civilians had been spared from the effects, the abhorrence felt for this new weapon was widespread. Many saw in it the next step in the dehumanization of war, and feared certain death from inhaling the poisonous fumes. The photographs of gas casualties – fatal or wounded – the stories of their suffering, and the gas mask, made a deep impression, in spite of the fact that the total number of fatalities due to gas in the war had 'only' been 90,000.⁵⁵ The airplane and gas featured prominently in the military theoreticians' expectations of the future. The most original and influential ideas during the interwar years, sometimes involving the combination of these two technologies, came from Great Britain and Italy.

5.1 *Giulio Douhet (1869–1930): the Father of the Strategic Air Raid*

If there is one name that has become synonymous with the use of aerial and gas raids on urban areas, it is that of the Italian artillery officer Giulio Douhet. Initially, prior to the outbreak of the First World War, his military career was dominated by the 'technologization' and motorization of the armed forces. From 1910 onwards he began to specialize in aviation, and started working for the still nascent aviation department of the Italian army. A supporter of Mussolini, he retired in 1918 as a Major General to devote himself to writing books on military aviation.

At first, shortly after 1910, Douhet felt that the military possibilities of aviation were grossly overrated and he even advocated a ban on the bombing of cities. Not only did he consider it an act of barbarism, but also militarily pointless. He even got entangled in a fierce debate with a prominent compatriot, Carlo Montu (1869–1949), who called such a ban false sentimentality, all the more so as shelling cities from ships was no issue, and because such raids could decide wars quickly and thus save lives in the process.⁵⁶ Douhet had his Pauline conversion in 1915, the year Italy joined the war on the side of the Allies. According to him, his analysis of the first year of the war showed that nations, not armies, were opposing each other. A war on this scale was only possible if all, civilians and soldiers, pulled their weight, and this explained the barbaric

55 Girard, *A Strange and Formidable Weapon*; Haapamäki, *The Coming of the Aerial War*.

56 Hippler, *Bombing the People*, pp. 38, 42, 48.

and tenacious character of the struggle. Battles were no longer decisive; the war as such was one big struggle, a massive battle of attrition, and the question was how to force a decisive breakthrough to bring about a quick end to it. Technology could be of help in this, in particular aviation technology, personified in Italy by the aircraft constructor Giovanni Cragoni (1886–1957). Douhet admired his modern, massive bombers that could destroy weakly defended, but still vital, targets, deep in the enemy's hinterland. These would not only be industrial, military, and infrastructural objectives, but would also target the enemy's will to fight. It would take four months, Douhet was convinced, to create a 'desert' in the enemy's hinterland. In November 1915 he described for the first time, in a style reminiscent of Wells, the effect of an attack of 100 aircraft, which would reduce the centre of Milan to ruins in ten minutes. This was the way an enemy could bring Italy to heel.⁵⁷

Immediately after the war, in 1919, Douhet published his ideas in a book: *Come fini la grande guerra* (How to end the great war). It summarized his views, which from 1915 onwards had increasingly come to include large-scale raids in the enemy's hinterland. Moreover, public opinion in Italy had become more receptive to this type of warfare in the later war years. The concept was in line with his conviction that strategic bombing was the only answer to the 'total' character of modern warfare. In his book he described an allied bomber fleet of more than 10,000 aircraft attacking German cities not only with explosives but also with gas and incendiary bombs. This was the first time such a deadly cocktail had been worked out in detail for the broader public. Douhet could gloss over the moral objections because, in his scenario, the population had been given prior warning in leaflets and had been called upon to bring their own government down. In other words, the raids served a political aim and did not constitute a terror attack; they were aimed at the political leadership through the citizens. On top of that, he now concurred with Montu that such raids would prevent protracted attritional warfare with large numbers of casualties. With Douhet's next book, published in 1921, *Il domino dell' aria* (Command of the air), his best known work, the prospect of gas and even bacteriological bombing raids quickly spread over Europe.⁵⁸ It was translated subsequently into Spanish (1930), French (1932), German (1935), and English (1942).⁵⁹ Certainly, from the Second World War onwards, Douhet had become the father of the strategic air raid as he was the first to present this method of

57 Ibid., pp. 103, 109–12.

58 Ibid., p. 129.

59 Douhet's ideas were discussed in the *Military Review* in 1933. His actual influence on international doctrinal development remains unclear, see: Hippler, *Bombing the People*, p. 137.

warfare in a coherent and well-balanced way, but he was by no means unique. In other countries similar ideas surfaced more or less simultaneously. In the year Douhet's book was published, for instance, the American journalist William Irwin (1873–1948) wrote *The Next War*, in which he discussed at length the spectre van Embden described in 1924 for the Dutch. Also the British chipped in.

6 The British View on Targeting Civilians

The special position of the RAF, along with a broadly shared public aversion against committing a massive army on the continent, alongside rigorous defence cuts, prompted British thinkers to look for alternative concepts for the defence of their island. Given the experiences of the First World War, the aircraft was to play an essential role in it. Within a relatively short time span, several books appeared featuring small and large-scale air raids. In 1922, RAF officer Percy Groves (1878–1959) published *Our Future in the Air*, envisaging the start of the next war as a massive air raid on the enemy's military objectives, infrastructure, and cities, crushing their morale. The RAF leadership endorsed such ideas. The Chief of the Air Staff, Frederick Sykes (1877–1954), for instance, advocated bombing the German hinterland in combination with a maritime blockade and committing ground troops.⁶⁰ In 1925, Basil Liddell Hart (1895–1970) published *Paris or the Future of War*, in which he called resistance against the gas weapon false sentimentality. After all, this weapon had firmly established itself in national arsenals, and its use, in combination with aircraft, against urban areas should be considered highly likely. In this Liddell Hart followed John Fuller, the man whom he, at least at the time, still considered the most visionary thinker on warfare.

Fuller published his innovative *The Reformation of War* in 1923, prompted by a deep horror of trench warfare, of which, like Liddell Hart, he had first-hand experience. The massive slaughter of soldiers in the mud of northern France and Belgium had convinced him that the war of the future would have to be largely technological and decisive. Tanks and aircraft were his 'panacea' to achieve this and to prevent massive numbers of casualties among the soldiers. But Fuller had no illusions. He recognized the total character of modern warfare, in which it was not immoral to also see civilians, whose activities behind the front kept the armies supplied and sustained, as legitimate war targets. In

60 Ash, *Frederick Sykes and the Air Revolution*, pp. 155–86.

his view, this also made the bombing of cities acceptable.⁶¹ According to Fuller, no moral boundaries were crossed in doing so, certainly not when labourers working for the war industry were hit, or when the attacked city had held military value for the enemy. Better still, he also claimed that a targeted (gas) attack on a capital would shorten the war and consequently the number of casualties, at the same time pointing to the fact that gas during the war had not caused large numbers of casualties.⁶² Both RAF actions in the colonies and its planning for the next European war in the post-war period seemed to support Fuller's view.

From 1919 onwards British defence budget cuts became a serious threat to the RAF, so much so that even its independence was in jeopardy. The service sought and, in a sense, found a solution by using the air arm in the colonies, shored up by the wholehearted support of Winston Churchill (1874–1965), the then War and Air Minister. It proved to be cheaper to commit the air force against rebellious populations than to send land forces. The RAF subsequently carried out air raids on civilian targets in Waziristan (1919),⁶³ Somaliland (1919–20) and Iraq (1921–22). Recently, these actions have received a dubious reputation, precisely because of the alleged use of chemical weapons against civilians, something Churchill seemed not to be violently opposed to.⁶⁴ After all, on 12 May 1919 he had declared: "I am strongly in favour of using poisoned gas against uncivilized tribes. The moral effect should be so good that the loss of life should be reduced to a minimum. It is not necessary to use only the most deadly gasses: gasses can be used which cause grave inconvenience and would spread a lively terror and yet would leave no serious permanent effects on most of those affected".⁶⁵ Although it remains unclear whether poison gases were really used by the British in Iraq, the threshold against using them on colonial peoples seems to have been significantly lower than for their use on Europeans. The use of gas by the Spanish, supported by the French army, in the Rif war in northern Morocco from 1921 onwards, is hardly disputed anymore.⁶⁶ These

61 The Dutch point of view is given by Johan Carel Diehl (1874–1963) "Een en ander over chemische strijdmiddelen", pp. 1002–009; Van Weeren, "Lucht- en Gasoorlog".

62 Fuller, *On the Reformation of War*, pp. 69–70, 112, 149–50. On German chemical warfare: Hanslian, *Der Chemische Krieg*. and on Dutch chemical warfare: Nieuwe Rotterdamsche Courant, 29 May 1922 and Klinkert et al., *Nederland Neutraal*, pp. 305–09, 323.

63 The mountainous border region between Afghanistan and Pakistan (then British India).

64 Omissi, *Air Power and Colonial Control*; Tanaka "British 'humane bombing' in Iraq during the interwar era", pp. 8–29.

65 Gilbert, *Winston S. Churchill*, vol. 4; Ferguson, *The War of the World: History's Age of Hatred*, p. 412; Douglas, "Did Britain use chemical weapons in Mandatory Iraq?", pp. 859–87.

66 Balali-Mood, *Basic and Clinical Toxicology of Mustard Compounds*, p. 33; Kunz, *Giftgas gegen Abd El Krim: Deutschland, Spanien und der Gaskrieg in Spanisch-Marokko, 1922–1927*;

colonial wars were scarcely noticed by European public opinion, and in military circles they were not considered relevant or instructive in comparison to 'real' wars between western states.

A name that is closely connected to the planning by the RAF for the next European war is Hugh Trenchard (1873–1956). He had been the commander of the *Independent Force*, and in that capacity he had studied the material and psychological effects of air raids on an enemy population. He agreed with Fuller that the air force would play a key role in the war of the future, and that the chance that such a war would begin with a large-scale and destructive air raid was considerable. Commanding the RAF from 1919 onwards, Trenchard, however, did not plan such a knockout blow. Although he did not exclude the possibility of attacks against population centres, he wanted to impose certain restrictions, for instance, by sparing hospitals and other clearly non-military objectives. In the 1920s the focus of planning lay emphatically on military targets and infrastructure. Trenchard deemed terror bombings morally unacceptable and militarily pointless at that. Only in the mid-thirties, when it became clear that Germany would again be a dangerous enemy, did Trenchard show more willingness to create chaos by the destruction of economic and industrial capacities, for example bombing factories sustaining the enemy war effort. The idea was to frighten the factory workers off coming to work. He also thought it was acceptable to disrupt the food transport to population centres, creating food shortages. Trenchard stopped short of where Douhet had ventured. Someone who went far beyond Douhet, was Wells, who added fuel to the flames in 1933 with his *The Shape of Things to Come*, in which the total destruction of cities by modern weapons knew no bounds anymore.

7 Resilience Takes a Tangible Form

Was protection for civilians still possible, or was disarmament the only solution? The military use of gas became a subject of debate in the League of Nations, and in 1925 this resulted in the Geneva Gas Protocol, which banned the use, but not the possession, of poison gases. The International Committee of the Red Cross chose the protection of the civilian population as the theme of its international conferences in the Hague in 1928 and Brussels in 1930. By doing so, the ICRC exposed itself to the criticism of advocates of disarmament, who were convinced that the organization *de facto* accepted the gas war as a

Balfour, *Deadly Embrace: Morocco and the Road to the Spanish Civil War*; and various publications by Rachid Yechouti.

given, and consequently did not reject it on principle.⁶⁷ The Red Cross conferences also stimulated the build-up of air raid protection. Great Britain had had a centralized air defence system since 1925, commanded by John Salmond (1881–1968), who had made a name for himself as RAF commander in Iraq. In Germany, the periodical *Gasschutz und Luftschutz* (Gas protection and air protection) brought air defence to the attention of the wider public from 1931 onwards, and in 1933 the government established the *Reichsluftschutzbund* (State Aerial Defence Union). In the same year, France saw the advent of the *Union nationale pour la défense aérienne et pour la protection des populations civiles* (National Union for Air Defence and for the Protection of the Civilian Population), later renamed *Comité national de défense aérienne et de sauvetage public* (National Committee for Air Defence and Public Safety).⁶⁸

In the Dutch press, too, the spectre of massive air raids, also with gas, against civilian targets, regularly resurfaced after 1924.⁶⁹ And the conclusions were mostly the same: either the country had to disarm completely or, conversely, build up a strong army capable of putting up a strong preventive stance.⁷⁰ From 1930 onwards, the spectre became increasingly concrete, due to rather detailed predictions of possible war acts on Dutch territory on the one hand, and exercises intended to familiarize the broader public with measures against air and gas attacks, on the other. These exercises were initiated in 1927 when the Ministry of War published the “Guidance with regard to the measures to be taken by civilian authorities for the protection of the civilian population against the consequences of air attacks”.⁷¹ It took a while, however, before this service actually staged exercises in public, but air defence had unquestionably gained momentum.⁷² In May 1933, for instance, the Amsterdam inspector of police Mathieu Gemmeke (1898–1964), published his “Bombs on the Netherlands”, accompanied by radio talks on the topic.⁷³ He saw his efforts as

67 Van Bergen and Abbenhuis, “Man-monkey, monkey-man: neutrality and the discussions about the inhumanity of poison gas in the Netherlands and the ICRC”, pp. 15–8.

68 France also had a *Centre de documentation pour la protection des populations civiles contre les bombardements aériens*.

69 Nuij, “Schrikbeeld gehuld in nevelen. Nederlandse defensie en chemische oorlogvoering, 1918–1939”, pp. 532–42; Linmans “Grootbedrijf van menschenlaching”, pp. 71–82; *Limburger Koerier*, 14 March 1934.

70 *Algemeen Handelsblad*, 23 October 1931.

71 *Algemeen Handelsblad*, 29 April 1927. My translation.

72 In 1931 the Guideline for Air Defence, for local and regional authorities was produced and in 1933 the Dutch Society for Air Defence was established.

73 A second edition had already been published in 1934. *Nieuwe Venlosche Courant*, 30 June 1934.

a necessary and urgent appeal to the Dutch population to take the protection against air raids seriously. He stated,

... if we are unprotected and unprepared, children and the elderly will be among the victims. But apart from that, entire economic life will be disrupted. By creating panic and breaking the morale of the people, the enemy will try to force an opponent to conclude a peace.⁷⁴

Gemmeke also pointed out that international legal rules did not really offer any protection, and even during an attack against military and economic infrastructural objectives civilian lives would be lost, and such an attack could come suddenly. However, with good preparation, effective protection, even against gas attacks, was possible. Gemmeke also gave a survey of what other countries had already achieved in this field. He also mentioned recent destructive air raids against civilians, such as by the French in Morocco in 1925–27, the Japanese bombings on Chinchow (Jinzhou) in October 1931 and on Shanghai three months later. According to the police inspector these had been air raids with incendiary bombs on open cities. “The great Chinese losses can only be explained by a total lack of discipline and a complete absence of even the most elementary principles of air defence”.⁷⁵ He also observed that all large European countries were strengthening their air fleets, an indication of a possible new war in Europe.

“Terrible, that is what the coming war will be, with not only the military but the entire population suffering the consequences. The mere thought of it is enough to make people shudder with horror”.⁷⁶ He ended, quoting Snijders, the debater of 1924, that the geographical position of the Netherlands, wedged in between large states, could lead to no other conclusion than the necessity of good armament and preparation, as being without defence would irrevocably end in foreign occupation after a lost battle.

Several months later the first Dutch municipality actually tried out the instructions from his guidance plan in an exercise: on 19 October 1933 Winterswijk fell prey to a raid with gas and incendiary bombs, and air defence and medical care were on standby. This was the start of a number of similar exercises at the local level.⁷⁷ In 1934, the exercises were scaled up considerably, and

74 Gemmeke, *Bommen op Nederland*, p. 20, my translation.

75 Ibid., p. 78, my translation.

76 Ibid., p. 87, my translation.

77 Doetinchem on 11 April 1934, Terneuzen on 17 April, Eindhoven on 5 May, Zaltbommel on 26 May, Ubbergen on 31 May, Arnhem on 1 June, Dieren on 12 June, Wageningen on 16 June, Nijmegen 3 September, and South-Limburg on 13 October.

this was the moment Snijders chose to come forward again. On 12 September 1934, the general attended the largest air defence exercise so far in the Netherlands. The scenario featured a large-scale air raid on the province of Overijssel from an enemy coming from the East; the Queen's Royal Commissioner in this province had shown himself to be an active advocate of air defence from the beginning.⁷⁸ Reality was mimicked as closely as possible: radio reports about approaching aircraft, the positioning of air defence artillery, blackouts of the cities, the preparation of shelters, emergency services with protective clothing and gasmasks to be handed out to the victims of mustard gas, incendiary bombs or shrapnel, including sirens announcing danger and the all clear. Many authorities and even foreign military attachés were present. According to the elaborate press reports, the whole exercise went smoothly and constituted a valuable contribution towards creating awareness among the population to prepare for such dangers. Shortly before this event, the newspaper *Indische Courant* had expressed this aptly:

Modern war is mainly portrayed to us as a terrible madness with attacks from the air, which will not exclusively, or perhaps not even mainly, be directed against the enemy armed forces, but against a defenceless civilian population, living in unprotected cities. The war of the future, war experts explain, will have to be fought between peoples in the fullest sense of the word. Civilians can no longer be spared in spite of all the laws of war with a generally humane tendency.⁷⁹

8 Concluding Remarks

In the first week of January 1936 the European newspapers were replete with stories about the Italian gas attacks against Ethiopian villages and cities, ordered by Italian air force general Mario Ajmone Cat (1894–1952). Mussolini's suggestion to also use bacteriological weapons had been rejected by the Commander-in-Chief Pietro Badoglio (1871–1956), partly on the basis of the

⁷⁸ *Nieuwe Tilburgsche Courant*, 27 December 1932. Provincial exercises with air and gas attacks also took place in Noord-Brabant/Limburg (October 1935) and Friesland (March 1936). Together with 'army days' (the first in Tilburg in 1936) and 'air defence days' (the first in The Hague in 1937) they prepared the population for the dangers of modern warfare. Local and regional authorities, together with private initiatives and the army, were responsible for these events.

⁷⁹ *Indische Courant*, 16 May 1934.

expected worldwide public outcry.⁸⁰ In the first decades of the 20th century the civilian had begun to realize his vulnerability, and the continent had lived through a wave of war violence. Now the spectre of gas bombardment for the first time materialized as a reality in the newspapers. Many had experienced the First World War as an unprecedented orgy of violence and destruction on a massive scale, and in the post-war era the genie could not be put back into the bottle. Although hardly justified by the state of technology, fantasies of large-scale devastation, led to an almost hysterical fear in the 1920s and 1930s. For different reasons, with different motives, military professionals, politicians, diplomats, and pacifists alike converged on one point: the civilian would become the victim of the wars to come on a scale that would dwarf that seen during the years 1914–18. In spite of the optimism of the roaring twenties and paper protocols, war formed an almost tangible threat. Modernization and technology had revealed their destructive drawbacks, and peace or no peace, that threat remained imminent. But apart from fantasies of destruction, this sentiment was also a powerful motivation for the quest for ways to prevent Armageddon, or at least to survive it. From this perspective one can say new forms of societal resilience were developing. Even before the outbreak of the Second World War, air defence had become part and parcel of the life of every European civilian. When the war did break out, the effect of the aerial bombardment fell short of most of the apocalyptic predictions, gas was never used, and, until 1942, the allies tried to minimize civilian casualties. The fact that their leaders shed off these qualms from 1942 onwards – but still refrained from using gas, at least as a battle-agent – shows that lines had been crossed. The passage from Wells to Hiroshima was not inevitable though, and was the result of a series of political choices.

80 Hippler, *Bombing*, pp. 213–14; Brogini Künzi, “Total colonial warfare”, pp. 313–26. The Italian Air Force was also probably responsible for the very first civilian casualties made by an air attack, in Libya during November 1911. The Ottoman government of the day tried to influence public opinion by framing these Italian actions as deliberately targeting hospitals and other non-military structures.