

American civil war: effects of industrialization



The American Civil War is widely regarded as the first great war of the industrial age. The impact of industrialization is most obviously seen in the introduction of new types of weapons, particularly at sea: the first battle between ironclads; the first ship sunk by a submarine; the use of mines (then called "torpedoes"). Except for the ironclads, however, these maritime innovations were too primitive or experimental to have much impact on the outcome.

The impact of industrialization upon the Civil War, it has been argued, was far more crucial on the logistic and strategic levels than in weapons deployed on the field of battle. Put in brief, the Civil War has been widely understood as a war between an industrial power—the North—and a largely pre-industrial society, that of the South. The contrast in their industrial capabilities showed most directly in the scale and conditions of their respective railroad networks.

We are interested in two aspects of this familiar analysis. First, was it true? Second, and more subtly, to what degree were contemporaries aware of it? To the first point we must return at the end of this essay; we will only pause here to note that the Union's industrial superiority has become, along with the Confederacy's structural internal weaknesses, the standard explanation for the outcome of the war. The second question is an interesting and important one in its own right; moreover, it bears upon the first. We have become accustomed to what may broadly be called an economic interpretation of war, and it is a modern commonplace that an industrial power has an overwhelming military advantage over a nonindustrial society. The more industrialized power can call upon both superior technology (e. g.,

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advanced jet fighters) and upon a much greater and more reliable supply of materiel of all sorts.

However, in the mid-nineteenth century, industrialization and modern technology were too new to have yet made a deep psychological impact. The British army, for example, issued until 1840 a little-modified version of the “Brown Bess” musket that had first been introduced before 1700. Until about the same time, Britannia ruled the waves with ships that were essentially only refined versions of those that defeated the Spanish Armada in 1588.

Long before the industrial revolution, Western armies were routinely defeating non-Western opponents; they did so not through superior weapons or resources, but by an exceptionally formidable military tradition, ultimately perhaps the heritage of Rome. The Civil War, however, pitted two sides that shared the Western military heritage, but differed greatly in their industrial capacity. Robert E. Lee was most certainly not outclassed by any Union general in his understanding of the principles of modern (by 1860 standards) warfare. The generals of the two sides had learned their trade side by side, at West Point, in Indian wars, and in the Mexican War. In their understanding of the battle field arts there was no significant difference between the two sides—save, perhaps, that Southern generals were on the whole better at it. In Lee, the Confederacy had from the outset a field commander and strategist of the first class; Lincoln’s struggle to find an adequate field commander is famous. The South was, moreover, the most martial part of the United States (itself a cause of its advantage in generals). In fighting qualities, Confederate soldiers of every rank were certainly the equal of their Union counterparts, yet in the end the South lost. We argue that it lost

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largely because of the Union's industrial superiority, but to what degree was anyone, on either side, aware of this fact? Moreover, if the leaders (and people) of one or the other, or both, of the warring sides were not fully aware of these factors, to what degree could they make use of them?

Let us begin the industrial comparison with the industry and technology that had the most direct impact, not on the battlefield but behind it. The North had a very much more extensive rail network, with not quite two and a half times as much rail mileage as the South. The Union could employ this network to move troops and materials to where they were needed; moreover, it had the basic industrial capacity to sustain and enlarge its rail network under the stress of war. In contrast, the railroad network of the South, limited to begin with, could not sustain itself in the face of either destruction at the hands of Union raiders, or—more important in the long run—the daily wear and tear of wartime operation. By the later years of the war, the South's railroads were essentially useless, while the North was able to extend its railheads at need to meet the requirements of its forces.

Even before the South's railroads were worn down, this difference of degree was sufficient to be also a difference of kind; the North's rail system was a true network, offering multiple routes between any given destinations. This both increased effective capacity, since troops and supplies could be sent along two or more routes, but also allowed the system to function even if a particular link were cut, by accident, a Confederate raid, or even a major Confederate advance. In contrast, the South's railroads were more isolated; if a line was lost, there often was no other that could be used.

Now, the Civil War was not the only major war of its era in which industrial powers were ranged on one or both sides. The decade and a half bracketing the Civil War saw a series of European wars, from the Crimean War to the Franco-Prussian War of 1870. Although the first of these saw the introduction of ironclads for shore bombardment, it was essentially a pre-industrial war. By contrast, the War of 1870 was thoroughly industrial: both sides deployed new types of long-range battlefield weapons, while the Prussians won their decisive victory largely through their use of their railroads for mobilization and troop deployment. This use of railroads was an innovation by the Prussian General Staff, and was far more systematic than any use of railroads during the Civil War. Moreover, there is no reason to think that the Prussian planners were inspired by the Civil War railroad experience, or even that they were particularly aware of it.

European military thinkers, indeed, tended in general to ignore the Civil War. It has been suggested that they did so to their great cost; the Civil War foreshadowed the First World War in that it showed what might happen in the industrial age if neither side in a war succeeded in delivering a swift knockout blow

Therein lay the difference between the experience of railroads in warfare during the Civil War and during the War of 1870. No one on either side in the Civil War had neatly drawn-up timetables of the Prussian sort; in the nature of the case they could not. The use of railroads in the Civil War was discovered by improvisation and experience. As we will see, the readiness to improvise and learn from experience was perhaps the subtlest, but most

profound, advantage that the Union's commanders had over their Confederate counterparts.

The duration of the Civil War also expanded the strategic scope of railroads. In the War of 1870, the Prussian railroads had essentially done their work by the time the major military encounters began. In the Civil War, generals on both side found occasion to employ railroads in strategic movement. Here the advantage lay with the Confederacy, simply because it operated along interior lines; as early as the Shiloh campaign of 1862, they were able to move forces over hundreds of miles in order to concentrate them against Grant.

Returning for now to the purely material aspect of industrialization, behind railroads lay a difference in overall industrial capacity. This industrial capacity not only underlay the sustenance of the rail network itself, but determined the degree to which supplies of all sorts, from artillery pieces to provisions to boots, could be provided. Items that sound trivial to the modern civilian were crucial to the soldier in the field; in one letter, a Confederate army nurse begs desperately for shoes, and her brothers in the ranks must have felt the lack even more urgently. At the most fundamental level of all, industrial capacity determined the degree to which manpower could be released for military service.

At the beginning of the Civil War, the North was already a relatively urban society, in which a minority of the population (primarily the farmers of the West) were able to provide the necessities of life to the rest. A great deal of manpower could therefore be mobilized, year-round, without cutting critically

into the North's ability to survive. In contrast, the South was an agrarian society. It is true that much of the South's prewar agriculture was cash-cropping, not subsistence, but this did not alter the fundamental issue. Once the South's cash-crop market was denied it, it was thrown back upon its own resources to feed itself, and a substantial fraction of the healthy male population was required, at least at some times of the year, to be available to work the land. Desertions, particularly around harvest and planting times, were a perennial problem for the South. Above all, the industrial capacity of the North allowed the Union to put a much larger army in the field, ultimately twice the size of the Confederate army, approximately 600, 000 as against 300, 000. Finally, in speaking of the South's wartime economic crisis, we are brought around in a sense to our starting point—the maritime dimension of the war. The war's naval innovations were, in and of themselves, inconsequential. Had neither side had ironclads, or had there been no experiments with mines, torpedoes, or submarines, the outcome would not have been significantly different. The one exception is only partial, because it applies to a technology that was no longer innovative by 1861: steam propulsion. On the open sea, even steam changed nothing fundamentally; the Union could have blockade the South as well with sailing frigates as it did with steamers; the British had done so quite effectively during the War of 1812.

On the Mississippi and other rivers, however, the situation was different. Sailing ships cannot operate effectively in the confined and shallow waters of a river, while oared galley gunboats are limited in size, and therefore the number and power of guns they can carry. They are in any case very costly

in manpower, and cannot row upstream save on a very slow-flowing river.

The Union's river operations, which eventually succeeded in cutting the Confederacy in two, were therefore distinctly a feature of the steam age.

Moreover, on the rivers, as everywhere else, the North's industrial might showed to effect. The South might have lacked a significant oceangoing merchant marine or blue-water shipbuilding capacity, but river steamers had long been a major feature of Southern life. Here, if anywhere, the South might have been able to compete on equal terms. But the North had the capacity to build and man large numbers of armed river steamers, including ironclads and "tinclads." In the event, the South lost control of the Mississippi well before its armies on either bank were defeated, but once it lost the river, those armies were cut off and could no longer support one another.

But we must now return to seapower, as opposed to "river power," and thus to perhaps the most fundamental of all the consequences of the North's industrial superiority. The industrial North had the shipbuilding capacity (and, perhaps equally important, the maritime community) to establish and maintain dominance at sea. The Union blockade could be run, but it could not be broken, so the South was never able to re-open the vital trade link by which it might have been able to export its cotton and thereby purchase and import munitions and other sinews of war. For the ordinary Southerner—even for a Confederate general—the economic strangulation of the South did not appear in a strategic light, but simply as a difficult fact of life. Inflation and shortages eventually rendered Confederate money more or less worthless, but in the memory of Confederate General Basil Duke, the money itself

became almost irrelevant, having only a symbolic meaning. The South was thrown back effectively on a subsistence economy, and there is a heroic quality in the ability of the Confederacy to supply its armies at all, even if badly.

The fact of the blockade, and the South's inability to break it by a decisive victory at sea, had a more more immediate military impact, however, than that of the eventual threat of starvation. It forced upon the South a fundamental inequality of objectives on the battlefield. Other things being equal, the Confederacy was doomed to be sooner or later strangled by the blockade. The only way it could escape this fate was by winning decisively on the field of battle. It had either to smash the Union armies so thoroughly that the North lay open to invasion, or at the least deal so crushing a blow that the North's population lost the will to fight. In fact, thanks to its excellent generals, the Confederacy came close to doing so, but never quite close enough.

In contrast, the Union had only to hold on, and avoid the defeat or demoralization that the Confederate generals sought so desperately to inflict. Its ultimate strategic victory was in effect certain, if only it could avoid defeat in the meantime. On occasions it barely did so, but the point remains that the fundamental objectives of the two sides were not equivalent, but rather complementary, and in a way that favored the North. The Confederacy had to win its battles. The Union had only to avoid losing them. " Lee ... could not afford to go on winning and retreating, whereas Grant could afford to go on losing and advancing."

We may now turn back to the matter of perception. Confederate generals, as noted earlier, were on the whole superior to their Union counterparts; this is one of the most familiar facts of the war, and has entered deeply into what may be called the legend of the war, particularly on the Southern side. Had Lincoln and Jefferson Davis begun the war with one another's generals, we may suspect that it would have been ended very much earlier. But there is some evidence that many Southern commanders had a persistent blind spot in understanding that one aspect of industrialization—railroads—that impinged directly upon their military tasks. Confederate general Joseph E. Johnston, for example, was “distrustful if not scornful of the new technology of mechanized rail transport.” He eventually gained some awareness of how railroads could be used in the movement of troops and material, but he was slow to do so.

This blind spot was not universal, as the Shiloh concentration showed, but it may have been characteristic. The martial culture of the South was broadly backward-looking. To many Southerners, the railroad may have appeared not exactly as a Yankee innovation, but as part of that alien, urban, smokestack culture, foreign to their experience and values. Railroads hardly appeared in the Union soldiers' vision either, however; Harvey Reid, who had the advantage of being a headquarters staffer with Sherman's army, mentions railroads only in the context of the destruction of railroad facilities at Atlanta. This might well be a consequence simply of the fact that the Union forces were on the offensive; in the railroad age, unless enemy railroads were captured intact—and the enemy was seldom so careless—the railheads were left behind as soon as an army began to advance.

In general, the industrial inequality of the two sides in the Civil War seems to have been little-recognized by contemporaries, at least in the general and conceptual sense. The importance of railroads was acknowledged, at least in a negative sense; destruction of enemy railroads was always a prime goal of raiders on both sides. But of the broader industrial disparity we find little acknowledgement.

From the perspective of both sides, this is perhaps inevitable. Considering the Northern view first, the advantages of their superior capacity was something they probably took for granted. Soldiers do not write home to their wives to delight in the fact that ammunition, food, and shoes are available. So long as they remain available, they are largely taken for granted. More generally, if at the outset of the war many Northerners had the perception that their industrial superiority would assure victory, they were quickly disabused of it by the early and continued successes of Confederate armies.

In the case of the South, something of a mirror image applies. If Southerners at the start of the war had held the perception that the Union's superior industrial base ensured its ultimate victory, they would scarcely have succeeded from the Union and marched to war with the confidence that they did. And, again, their victories long gave them reason to think they might prevail. As the effects of the disparity gradually made themselves felt, they appeared in the form of perennial shortages; a general's remark on high prices and the worthlessness of money, a nurse's plea for shoes. "On the ground," the fact was that Confederate armies fought well, and with determination, almost to the very end.

We must come around again, then, to the first of the questions posed early in this discussion. Did the industrial superiority of the North lead to its victory. The consensus of historians is that it did. But as Gabor Boritt trenchantly points out, in much of the recent scholarly study of the Civil War and its outcome, the fact of the war itself seems almost to drop out of the equation. In response, he argues that the outcome was, in fact, ultimately contingent. In spite of all the material advantage accruing to the North, the Confederate armies won many of their battles; had they won a few more—Gettysburg comes to mind—the Union war effort might have begun to disintegrate, and the war would then have had to be settled upon terms. A comparison may be made to the First World War; Germany was economically overwhelmed in much the way that the South was, but German offensives still came close to breaking the Allied armies as late as the summer of 1918. Had they done so, then (regardless of the specific terms of settlement), the war would have gone down as a German victory.

Where the disparity of industrial power made itself felt, as was suggested earlier, was in the unequal victory conditions forced upon the two warring sides. To bring the war to a satisfactory close, the Confederacy had to win a strategically decisive victory, while the Union had only to avoid a strategically decisive defeat. Particularly in the earlier part of the war—before the consequences of the industrial factors made themselves directly felt—the difference was critical. Had Jefferson Davis had as much difficulty finding a good general as Abraham Lincoln did, the outcome of the war might have been very different. The South had to win in the field, and it very nearly did. The North had to avoid defeat in the field, and it just managed to do so. That

is the ultimate measure of the disparate industrial capacities of the two sides.