

## DECODING THE ORIGINS OF H. G. WELLS'S 'THE LAND IRONCLADS' AND SIR ERNEST DUNLOP SWINTON'S TANK

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H. G. Wells's 1903 short story, 'The Land Ironclads', is the first popular and widely cited fictional account of the modern armoured, cross-country fighting platform, known today as the tank. Wells's 'land ironclad' idea was, at that time, the most fully realised concept of a land-based, mobile war machine, but it was nonetheless a fictional depiction of what-could-be and not what-is. Some years later when the battlefield tank made its debut in the First World War, Wells claimed authority over its invention, and in doing so, rankled the man most war historians consider the person responsible for making the tank possible: Sir Ernest Dunlop Swinton. This former war correspondent-turned-military-engineering-manager declared his own status as the inventor of the tank while figuratively blasting Wells for his assertion of inventorship. These two public figures each make claims of inventorship over what came to be known as the tank, but they each operate from widely different positions within the social: the writer and his cultural artwork, and the engineer and his technological artefact. Just the same, these two 'inventors' share a culture within which a number of ideas related to the tank circulate and ultimately influenced its development in the First World War, but who can be said to be *the* inventor of the tank? How do these shared cultural ideas and concepts circulate to produce such a technological artifact such as the tank? What does the notion of inventorship mean within a complex network or web of relations of which the tank is situated at the interstice of many connections? These questions are addressed in the following essay in order better to develop the public debate between Wells and Swinton, while questioning the problematic concept of inventorship.

Before proceeding to the claims between Wells and Swinton, it is worthwhile to explain where Wells's ideas came from in writing 'The Land Ironclads'. In this story, Wells sets an entrenched agrarian force against his 'fully endorsed scientific men' and their magnificent fighting machines, the land ironclads.<sup>1</sup> The resulting rout by the engineers over the peasants reflects what Jack Williams identifies as Wells's recurrent theme: 'the modern world is in conflict with the primitive past.'<sup>2</sup> However, it seems more accurate in this case to point out that the 'primitive past' is not merely in conflict with the 'modern world', but instead that the modern world is meant to overcome and supplant the primitive past thanks to its embrace of new technologies such as Wells's 'land ironclads'.

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<sup>1</sup> Roslynn D. Haynes, *H. G. Wells: Discoverer of the Future, The Influence of Science on His Thought* (New York: New York University Press, 1980), 76.

<sup>2</sup> Jack Williamson, *H. G. Wells: Critic of Progress* (Baltimore: Mirage, 1973), 30-1.

The importance of Wells's vision of mobile fighting machines is not just that it was a means to overcome a new type of trench warfare, but that his imaginative invention blended together various non-obviously related technologies into a new technical assemblage, which he christened the 'land ironclad'. One of Wells's gifts as a writer of early science fiction was to synthesise various technologies into an imaginative and cohesive whole. Wells demonstrates this ability in 'The Land Ironclads' by uniting weaponry, armour, mobility, and military tactics in a way that had not yet been fully realised before that time. However, Charles Keller and Tom Miller repeat the finding of Norman and Jeanne MacKenzie that J. W. Dunne is the one who first imagined 'armoured fighting machines'.<sup>3</sup> In fact, the MacKenzies cite correspondence between Dunne and Wells that reveals Dunne supplied Wells with the idea of 'big fat pedrail machines'.<sup>4</sup> Keller and Miller go further than this however, and develop a succinct historical sketch of modern tank development that ranges from Leonardo da Vinci to Kaiser Wilhelm II.<sup>5</sup> J. P. Harris nevertheless establishes in his thorough analysis of 'The Land Ironclads' that Wells was the first author to combine cutting-edge technology with new tactics to break the stalemate produced by modern trench warfare. This military stalemate was theorised earlier than the publication of Wells's 'The Land Ironclads', by the economist Ivan Stanislovovich Bloch in his six volume work, *La Guerre* (1889-1900), and the abridged 1899 English translation, *Is War Now Impossible? Being an Abridgement of the War of the Future in Its Technical, Economic and Political Relations*.<sup>6</sup> Bloch argues in these works that modern war is an irrational exercise, because new weapon technologies combined with obsolete tactics will lead to tremendous loss of life. He asserts that warfare as it had been known will change following the development of mass-produced, quick-firing rifles and new bombardment technologies. For Bloch, these developments eliminated face-to-face engagement, and essentially separated the two opposed forces by a very dangerous open space, which was later nominated during the Great War as 'no man's land'.<sup>7</sup> Bloch accurately prophesies, 'the next

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<sup>3</sup> Charles Keller and Tom Miller, 'Commanding the Land Ironclads', *Wellsian*, 26 (2003), 31-45 (31).

<sup>4</sup> Norman and Jeanne MacKenzie, *H. G. Wells: A Biography* (New York: Simon and Schuster, 1973), 222. Ped-rail technology is a precursor or perhaps more accurately an analog to caterpillar treads. It is essentially a wheel with large rubber "feet" attached that make it well suited for traversing cross-country terrain. Wells names B. J. Diplock and his ped-rail technology as the technical inspiration for the "land ironclads" on *War and the Future: Italy, France and Britain at War* (New York: Cassell, 1917), 161.

<sup>5</sup> Keller and Miller, 31-2.

<sup>6</sup> Jan Bloch, *La Guerre (1889-1900)*, ed. Sandi E. Cooper (New York: Garland, 1973), and I. S. Bloch, *Is War Now Impossible? Being an Abridgement of the War of the Future in Its Technical, Economic and Political Relations* (1899) (Aldershot: Gregg Revivals, 1991).

<sup>7</sup> Major-General Sir Ernest Dunlop Swinton is generally cited as originating the term "no man's land," because of his use of the term in describing the area between opposing trenches in his "Eyewitness" press dispatches from the Western front on behalf of the British military.

war...[would] be a great war of entrenchments'.<sup>8</sup> Furthermore, Bloch writes metaphorically like Wells, using the natural sciences as a way to write about the social sciences – the former as a metaphor for the latter:

Natural philosophers declare that the atmosphere reveals at times the presence of a certain so-called cosmic dust. It influences the change of colours in the sky, it colours the sunlight with a bloody line, it penetrates our dwellings and our lungs, acts injuriously upon living organisms, and, falling even upon the summits of hills, leaves its traces upon their mantles of virgin snow.

In the public and private life of modern Europe something of the same kind reveals itself. A presentiment is felt that the present incessant growth of armaments must either call forth a war, ruinous both for conqueror and for conquered, and ending perhaps in general anarchy, or reduce the people to the most lamentable condition.<sup>9</sup>

Bloch's use of 'cosmic dust' to describe an otherworldly and foreboding influence on humanity from without is like a klaxon call to raise humanity's awareness to the distressing aspect of a creeping horror of unacknowledged irrationality of killing one another. Bloch's initial vision quoted above is in large part the opposite of Wells's *In the Days of the Comet* (1906), which heralds the coming of a mysterious comet that after dispersing its mysterious contents in the Earth's atmosphere, humanity ushers in an era of rational cooperation and utopia. However, Bloch does turn his vision toward utopia after his initial warning by appealing to rational discourse and acknowledgement of the barbarity of warfare, particularly that of the modern era in which technology increases killing capacity and separates the agents of war.

In the case of 'The Land Ironclads', Wells much more explicitly mirrors Bloch by developing the theorist's prophetic war-gone-awry thesis in his short story. In doing so, Wells integrates Bloch's social concerns about modern war into his primitive versus modern metanarrative. It should be first noted that Wells had obviously read Bloch prior to writing 'The Land Ironclads'. This is revealed in an early exchange between the war correspondent and a non-commissioned officer:

'And this is war!'

'No,' said the young lieutenant; 'it's Bloch.'<sup>10</sup>

The entrenched warfare Wells presents the reader is equated to Bloch, but as Harris reports, 'the lieutenant's reply must have puzzled many of Wells's

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<sup>8</sup> Niall Ferguson, *The Pity of War: Explaining World War I* (New York: Basic, 1999), 9.

<sup>9</sup> Bloch, lxiii.

<sup>10</sup> H. G. Wells, 'The Land Ironclads' (1903), *The Complete Short Stories of H. G. Wells*, ed. John Hammond (London: Phoenix Giant, 1999), 603-620 (603).

readers.’<sup>11</sup> Be that as it may, Wells was known as an advocate primarily of his own work and ideas, but he also supported the ideas of others that he considered significant. Clearly, Wells promotes Bloch’s ideas in ‘The Land Ironclads’, because the essential technological problem of the story deals with breaking through an entrenched stalemate in war. Wells devises his ‘land ironclads’ not as a means to kill more enemy combatants, but instead as a means to operate a cleaner war that breaks the stalemate and ends the war earlier through technological superiority.

Wells’s ‘The Land Ironclads’ and its synthesis of modern technological advancements mixed with Bloch’s ideas about the future of military conflict reached a wide audience in its initial publication in the *Strand Magazine*. The recognised literary publication the *Strand Magazine* published Wells’s short story in 1903 – thirteen years before the British tank was unveiled to the world at Flers and Courcellette on 15 September 1916 during the First World War’s Battle of the Somme. Also, the *Strand Magazine*, with its peak circulation of 500,000, was well known for publishing stories by notable authors including Wells, Arthur Conan Doyle, and Rudyard Kipling. With such a large circulation and secondary reading among relatives, friends, and co-workers, the *Strand Magazine* and Wells’s ‘The Land Ironclads’ was read by a large number of British subjects including the scientists, engineers, and British military officers involved in tank development and deployment thirteen years after the first publication of Wells’s short story in 1903. Despite the circulation of Wells’s story among those who turned his imaginative ideas into reality, there was one person who challenged both Wells’s later claims of prophetic inventorship of the tank and the fact that ideas, particularly those reproduced through mechanical reproduction, circulate within culture.

The debate over inventorship of the tank concerns Wells’s influence on the creation of the British tank, and it was played out between Wells and Major-General Sir Ernest Dunlop Swinton, whom Spence C. Tucker and other military historians consider the person most responsible for convincing the British military to design and commit invaluable resources to its development and utilisation in the Great War.<sup>12</sup> The Wells-Swinton debate initially forms while the war is in progress in their early publications reflecting on the tank in war. Then, their argument settles somewhat in their post-war autobiographies only to explode following Wells’s reaction to a BBC interview with Swinton at the beginning of the Second World War. The hypothesis asserted in this paper is that Wells’s story ‘The Land Ironclads’ influenced the development of the tank and its operational tactics. This is not to say that Wells was the isolated originator of the idea of mobile, armoured weaponry, but it is without doubt an imaginative synthesis of different technologies in a well-developed thought experiment that influenced the ideas of

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<sup>11</sup> J. P. Harris, *Men, Ideas, and Tanks: British Military Thought and Armoured Forces, 1903-1939* (New York: Manchester UP, 1995), 5.

<sup>12</sup> Spencer C. Tucker, *The Great War: 1914-18* (Bloomington: Indiana UP, 1998), 109.

others regarding the tactical dilemma presented by trench warfare. This essay maps the claims of these two authors/inventors – Wells and Swinton – in order to lead to further research questions regarding the origin of the tank and the co-influence of culture, science, and technology.

The Swinton-Wells debate began with Wells's first hand account and mediation of the war in his 1917 book *War and the Future: Italy, France and Britain at War*. In the chapter titled simply, 'Tanks', Wells argues that the idea for and construction of the tank originated in the civilian sector, from his story and real-world ped-rail technology, rather than in the military ranks. On the other hand, Swinton challenges Wells's claims in his 1918 work, 'The Tanks'.<sup>13</sup> This article presents three primary narratives: 1) it describes the development of the tank, 2) it reports the first tank battle at the Battle of the Somme, and 3) it argues that the tank can save British lives in war (at the expense of the lives of enemy Germans). Moreover, Swinton uses this work to challenge Wells's assertions on the origin of the tank by claiming that the modern tank is a military invention and that Wells had absolutely no influence on its creation or development.

In the first public exchange between Wells and Swinton regarding inventorship of the tank, Wells develops a case for what he does best: prophetic extrapolation. In *War and the Future*, Wells dutifully points out that he first described a 'land ironclad' – a term he repeatedly uses in parallel and as a replacement for tank. He emphasises that the first written account of tanks in battle by Beach Thomas and Philip Gibbs mirrors his 'land ironclads' and his tactics for them. Wells goes on to say that he considers British tanks his 'grandchildren'. Despite Wells feigning humility in saying that he was not the 'prime originator' of the tank, he still considers himself a prophet of science and technology.<sup>14</sup> Patrick Parrinder best describes Wells as 'anxious to have his prophethood recognized', and 'his way of being a prophet involves both self-inflation and energetic self-deprecation'.<sup>15</sup> This is confirmed by the very title of his Great War account. It is about war in the present as well as war in the future. He extrapolates science and technology of his present into the future as both prophecy and warning, pointing to previous works as corroborative inspiration for his own prophetic vision of the future.

More to the point, the crux of the debate between Wells and Swinton originates in a passage halfway through Wells's 'Tanks' chapter in *War and the Future*. In this important passage, Wells reflects on the tank's appearance on the battlefield and his thoughts on its origin:

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<sup>13</sup> 'The Tanks' first appeared in Walter Hines Page's periodical, *The World's Work*, and it has a notable voice addressing an American people, particularly conscripted soldiers, aiding the Allied effort.

<sup>14</sup> Wells, *War and the Future*, 160.

<sup>15</sup> Patrick Parrinder, *Shadows of the Future: H. G. Wells, Science Fiction, and Prophecy* (Liverpool: Liverpool UP, 1995), 8.

For my own part I never imagined the land ironclad idea would get loose into war. I thought that the military intelligence was essentially unimaginative and that such an aggressive military power as Germany, dominated by military people, would never produce anything of the sort, I thought that this war would be fought out without Tanks and that then war would come to an end. For of course it is mere stupidity that makes people doubt the ultimate ending of war. I have been so far justified in these expectations of mine, that it is not from military sources that these things have come. They have been thrust upon the soldiers from without.<sup>16</sup>

In this passage, Wells reinforces his prophetic vision by reiterating ‘land ironclads’ rather than ‘tank’, which he does repeatedly throughout the chapter. Second, Wells has little patience for the British military leadership and their lack of imagination. In fact, it surprises him that something like the tank could be developed by the British military under the auspices of the British government.

Wells had already presented his concerns about what he perceives as anti-science perspectives in the government, and by extension, the military in his 1916 novel, *Mr. Britling Sees It Through*. In the following passage, Mr. Britling laments the state of British politics to the American Mr. Direck:<sup>17</sup>

In America you have so far had no real conservative class at all. Fortunate continent! You cast out your Tories, and you were left with nothing but Whigs and Radicals. But our peculiar bad luck has been to get a sort of revolutionary who is a Tory mandarin too. Ruskin and Morris, for example, were as reactionary and anti-scientific as the dukes and the bishops. Machine haters. Science haters.<sup>18</sup>

The government leaders are seen as ‘machine haters’ and ‘science haters’ in the same vein as John Ruskin, the social critic whose writings influenced the utopian writer William Morris, who wrote *News From Nowhere* (1890). Furthermore, Wells uses *Mr. Britling Sees It Through* to present his dislike of the “‘army” class’ and his belief, voiced through Hugh Britling in a letter to his father: ‘all this

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<sup>16</sup> Wells, *War and the Future*, 173-4.

<sup>17</sup> One of the best fictional discussions regarding Wells’s *Mr. Britling Sees It Through* is between Frederic Henry and Count Greffi in Ernest Hemingway, *A Farewell to Arms* (New York: Scribner, 1929). Henry’s uncompromising response to Wells’s title, “‘No he doesn’t...He doesn’t see it through,’” is a jibe at Wells himself, because *Mr. Britling* is unmistakably based in part on Wells’s life. Whereas Count Greffi thinks the novel is, “‘a very good study of the English middle-class soul,’” Henry’s response is, “‘I don’t know about the soul’” (260).

<sup>18</sup> H. G. Wells, *Mr. Britling Sees It Through* (New York: Macmillan, 1916), 17.

business could be done far better and far cheaper if it wasn't left to these absolutely inexperienced and extremely exclusive military gentlemen' (308, 312). When Hugh says, 'We waste time, we waste labour, we waste material, oh Lord!', this correlates with Wells's belief that a wasteful and inefficient military-political body such as the British military could produce his imagined 'land ironclads' (310). Additionally, the above passage from *War and the Future* articulates Wells's belief that science and technology can transform war in such a way to save lives through decisive victories and maintaining a technological advantage over others in order to end war. He considers it 'mere stupidity' to think that an end to war could be had through technological advancement – the Cold War would prove Wells most decisively wrong on this count. Finally, the lines that launched Swinton's war of words is that the tank was pushed onto the British military from civilian sources including Wells, rather than achieved through 'military intelligence'. These examples reinforce what Keller and Miller call 'classic Wells – the radical reformer and agitator', as well as a certain propensity on Wells's part to enforce a particular self-promoting point of view.<sup>19</sup>

In the same year as Wells's *War and the Future* and his commandeering the inventorship of the tank, Swinton responds to Wells's claims in his article for *The World's Work: A History of Our Time, Volume 34* titled 'The "Tanks"'.<sup>20</sup> Specifically, Swinton declares that he must refute Wells's claim, in Swinton's rephrasing, 'that the Tanks have not come from military sources but have been thrust upon the soldiers from without'. He concedes that civilians were involved in the development of the tank, but he makes it clear that 'the first to appreciate the necessity for it, to urge its provision, and to insist on the feasibility of its construction, were, in fact soldiers.'<sup>21</sup> John Keegan reinforces Swinton's belief that the tank was a military idea when he writes:

As early as December 1914 a visionary young officer of the Royal Engineers, Ernest Swinton, having recognized that only a revolutionary means could break what was already the stalemate of barbed wire and trench on the Western Front, had proposed the construction of a cross-country vehicle, armoured against bullets, that could bring firepower to the point of assault.<sup>22</sup>

Furthermore, Swinton makes the bold assertion that 'those soldiers who gave the impulse for this innovation did so without any knowledge of Mr. Wells's brilliant forecast written in 1903. No disparagement or depreciation of others is intended by

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<sup>19</sup> Keller and Miller, 39.

<sup>20</sup> Colonel E. D. Swinton, 'The "Tanks"', in *The World's Work: A History of Our Time*, 34 (1917), 569-76. All subsequent references in the text to this work will be to 'The Tanks.'

<sup>21</sup> 'The Tanks', 573.

<sup>22</sup> John Keegan, *The First World War*, (New York: Knopf, 1999), 297.

this statement of fact.’<sup>23</sup> However, Swinton’s ‘statement of fact’ denouncing Wells’s ‘The Land Ironclads’ and its influence on the development of the British tank has some obvious problems and leads to the question – why did Swinton choose to level these charges against Wells?

One possible reason for Swinton’s condemnation of Wells’s claims has to do with his personal involvement in the development of the tank as a physically real war machine. Trevor Wilson names Swinton as the person with the ‘right qualifications and experience and ability to employ them’ towards assembling the ‘jigsaw’ puzzle of technologies brought together in the creation of the tank.<sup>24</sup> Swinton was an engineer and served as the official ‘eyewitness’ reporting from the front lines early in the war. He was aware of the Western front challenges, and he had a technical expertise that empowered him to see technical solutions to those challenges. Whereas Wells represents the man of letters, agitating for change through the exercise of imagination, Swinton characterises the classical image of the engineer – someone with practical, experience-gained knowledge rather than theoretical aptitude.

Swinton’s role in the development of the tank begins with his writing to Sir Maurice Hankey, “about devising armed caterpillar tractors to breach the trench barrier”.<sup>25</sup> This set in motion a series of events that resulted in the War Office creating a committee to investigate this, and Winston Churchill, First Lord of the Admiralty, creating his own committee to study this concept as a “Trojan horse idea – an infantry carrier” (Wilson, 340). The testing failures resulted in waning interest in both committees, but Swinton again urged the construction of these war machines after obtaining Sir John French’s support (Wilson, 340). The result of this second intervention was that the War Office committee merged with the Admiralty’s Landships Committee, which led to the Mark I tank employed at the battle of the Somme. Through these proceedings, Swinton was promoted to overseeing the day-to-day operations and training of the tank crews prior to the Somme. Additionally, he developed his own well-considered tactics for the use and attack potential of the tank. For his part, he believed that the tank should not be employed until sufficient numbers were amassed for a large operation.<sup>26</sup> The reason is that he was well aware of the surprise potential of the tank. Once the Germans

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<sup>23</sup> ‘The Tanks’, 573.

<sup>24</sup> Trevor Wilson, *The Myriad Faces of the War: Britain and the Great War, 1914-1918* (Cambridge: Polity, 1986), 340.

<sup>25</sup> Wilson, 340.

<sup>26</sup> Swinton describes his proposed tactics in his ‘Notes on the Employment of Tanks’, which is taken from Spencer C. Tucker, *The Great War: 1914-18* (Bloomington: Indiana University Press, 1998), 110: ‘Since the chance of success of an attack by tanks lies almost entirely in its novelty and in the element of surprise, it is obvious that no repetition of it will have the same opportunity of succeeding as the first unexpected effort. It follows, therefore, that these machines should not be used in dribbles (for instance, as they may be produced), but the fact of their existence should be kept as secret as possible until the whole are ready to be launched, together with the infantry assault, in one great combined operation.’



were made aware of the tank in battle, they would devise their own counter-tactics to defeat the tank such as widening trenches and employing large calibre, high velocity rifle rounds to pierce tank armour. Unfortunately, as Spencer C. Tucker points out, Field Commander Haig believed that even a few tanks might make a difference on the Somme offensive, and Swinton's disagreement with his commanding officer resulted in his plan's revocation and his replacement.<sup>27</sup> Therefore, Swinton probably published this piece in an effort to record publically his own place in the history of the tank, which might have been eroded by his name's exclusion from a list of persons involved in tank development given to Wells by Dr. T. J. Macnamara.<sup>28</sup>

Despite Swinton's criticism of Wells's claims to the British tank, it is crucial to understanding the relationship between these two 'authors' of the tank by examining the language and vocabulary that each used to describe the tank. In this respect, it is likely that Wells's 'The Land Ironclads' adds to the language or jargon in technoscientific circles and that used by readers of his work. In fact, 'The Land Ironclads' creates the discourse for tanks as demonstrated below. Wells adds to what Damien Broderick terms the science fiction 'mega-text', or the shared concepts and vocabulary that define the genre.<sup>29</sup> Thus, in the case of "The Land Ironclads," Wells defines the way in which the prophesied tanks are linguistically engaged by subsequent writers and readers. Swinton, writing for his own purposes counter to those of Wells in *War and the Future*, connects into the shared mega-text created earlier by Wells in 'The Land Ironclads'. Wells describes the 'land ironclads' as a 'large and clumsy black insect, an insect the size of an iron-clad cruiser', as well as 'vast cockroaches'.<sup>30</sup> Swinton parallels Wells by describing a group of tanks in practice as 'a nest of scorpions'.<sup>31</sup> Wells repeatedly refers to his 'land ironclads' as 'monsters', and specifically calls them on one occasion 'the big black monster'.<sup>32</sup> Likewise, Swinton calls his tanks "slug-shaped monsters" originating from a 'monstrous and evil brood'.<sup>33</sup> Other parallels between these two authors' works has to do with Swinton referring to the evolution of tank in biological terms, which mirrors Wells's other works including *The Time Machine*

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<sup>27</sup> Tucker, 110. Haig was dealing with the growing number of casualties on the Western Front, and it is believed that he hoped the tank would reduce these losses. However, another connection to Wells might be at operation here. Wells employs only fourteen land ironclads to defeat a whole army. See Wells, 'The Land Ironclads', 617.

<sup>28</sup> Wells, *War and the Future*, 162. Dr. T. J. Macnamara was originally a schoolteacher, who was elected to the House of Commons in 1900, and later served as Parliamentary and Financial Secretary to the Admiralty.

<sup>29</sup> Damien Broderick, *Reading by Starlight: Postmodern Science Fiction* (London: Routledge, 1995), 59. Science fiction mega-text defining concepts include the ray gun, starship, and hyperdrive.

<sup>30</sup> Wells, 'The Land Ironclads', 608, 612.

<sup>31</sup> Swinton, 'The Tanks', 571.

<sup>32</sup> Wells, 'The Land Ironclads', 608, 609, 611, 613, 614, 616, 617.

<sup>33</sup> Swinton, 'The Tanks', 570-1.

(1895), *The Island of Doctor Moreau* (1896), and *The War of the Worlds* (1898).<sup>34</sup> In these examples, Swinton draws on the language first developed by Wells. Regardless of who actually built the first tank, the way in which the tank is engaged in language was in large part defined by Wells in 'The Land Ironclads' and some of his other works in his oeuvre. Swinton's own cultural awareness probably contributed to the ways in which he described his own creation thanks to Wells's writing, and it is equally possible that both Wells and Swinton were relying on a larger shared corpus of language regarding their technical descriptions, which developed from the rise of industrial production and Darwinian evolutionary theory.

Wells's influence on the development of the tank is supported further by Lieutenant-Colonel Albert Stern, an integral member of the secret British tank project, who wrote about Wells and his fictional invention of 'land ironclads' in his memoir *Tanks 1914-1918: The Log-Book of a Pioneer*. John Keegan describes Stern as one of Swinton's 'collaborators', but he was actually the secretary to the Admiralty Landships Committee and, according to his memoir, the person responsible for christening this new battlefield technology 'tank'.<sup>35</sup> Unlike Swinton, who seems to denounce the influence of culture on his work with the tanks despite his own mentioning of the *Strand Magazine* and the London stage, Stern presents himself in his memoir as an educated, gentlemanly officer who acknowledges remembering 'The Land Ironclads' while demonstrating the connections between himself and British authors. According to his memoir, he corresponded with Arthur Conan Doyle following the Battle of Cambrai in November 1917.<sup>36</sup> More importantly, Stern knew of Wells's works, introduced Wells to the tank in a first hand demonstration, and even dined with the author on more than one occasion.<sup>37</sup> Furthermore, Stern writes that the first time that he read a written proposal for a 'cross-country Armoured Car of high offensive power' by Commodore Sueter, Lieutenant-Commander Briggs, and Major Hetherington, he realised that, 'This was much the same fantastic idea that Mr. H. G. Wells had developed in one of his stories years before.'<sup>38</sup> Thus, Stern's account dismantles Swinton's argument that Wells's writing was unknown to the British soldiery and as a result was not influential to the development of the tank.

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<sup>34</sup> Swinton, 'The Tanks', 571, 573.

<sup>35</sup> Keegan, 298.

<sup>36</sup> The Battle of Cambrai is regarded as the first successful tank battle of the Great War. A detailed account of this battle in late 1917 can be found in A. J. Smithers, *Cambrai: The First Great Tank Battle, 1917* (London: Cooper, 1992).

<sup>37</sup> Sir Albert G. Stern, *Tanks 1914-1918: The Log-Book of a Pioneer* (New York: Hodder and Stoughton, 1919), 83, 99, 107. Also, Wells corroborates Stern's tank demonstration in his book *War and the Future* on page 166, and Wells allows Stern to publish a short article called "Tanks," which appears to be an early draft of the chapter of the same name in Wells' *War and the Future*.

<sup>38</sup> Stern, 9, 11.

Despite Stern's independent account in *Tanks 1914-1918*, Wells and Swinton each continued to promote his unique claim of inventorship to the tank. The final phase of the debate began when Swinton published his autobiographical work of his experiences in the Great War titled, *Eyewitness: Being Personal Reminiscences of Certain Phases of the Great War, Including the Genesis of the Tank* (1933). The title refers to his earlier wartime role as war correspondent, but he significantly makes a point to include the subtitle 'Genesis of the Tank' as a reminder of his other, perhaps less well-known, wartime occupation. His account of the development of the tank in *Eyewitness* largely rehearses his earlier narrative in 'The Tanks', but the one significant difference between the two versions is that Swinton admits having read Wells's 'The Land Ironclads' when it was first published in 1903! While discussing other individuals developing tank-like developments in the early Twentieth Century, which includes engineering work by A. C. Nesfield, weapon designs by Major A. I. R. Glasfurd, and the imaginative extrapolation of Wells, Swinton reports being shown a copy of 'The Land Ironclads' between September and October 1915:

I was also shewn an old copy of the *Strand Magazine* of 1903, containing Mr. H. G. Wells' marvellous forecast – *The Land Ironclads* – in which immense armoured machines, propelled on the Pedrail system, were employed in land warfare. I had read this story when it first came out, but had looked upon it as a pure phantasy and had entirely forgotten it. The development of the internal-combustion engine seemed likely to bring about the realization on a less grandiose scale of Mr. Wells' dream.<sup>39</sup>

Swinton, like Wells in *Experiment in Autobiography*, appears to have experienced a change of mind, or at least a recall of suppressed memory. Instead of vociferously denying any exposure to 'The Land Ironclads' in 'The Tanks', Swinton has changed his tune and admits to having read the story when it first appeared in the *Strand Magazine*. Gone is the strong defence of his inventorship found in 'The Tanks'. Instead, Swinton gives a very detailed account of his involvement in the development of the tank for the British involvement in the Great War, but Wells is only mentioned anecdotally.

A year later, Wells largely retells his earlier account on the genesis of the tank in his 'The Land Ironclads' in the 1934 *Experiment in Autobiography* while redistributing governmental and military honors without a mention of Swinton:

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<sup>39</sup> Sir Ernest Dunlop Swinton, *Eyewitness: Being Personal Reminiscences of Certain Phases of the Great War, Including the Genesis of the Tank* (Garden City, NY: Doubleday, Doran, 1933), 152-3.

An old notion of mine...was being worked out at that time in the form of the Tanks, and it is absurd that my imagination was not mobilized in scheming the structure and use of these contrivances. These obvious weapons were forced upon the army by Winston Churchill against all the conservative instincts of the army; Kitchener had turned them down as 'mechanical toys,' and when at length they were put into action, it was done so timidly and experimentally and with so inadequate an estimate of their possibilities that their immense value as a major surprise that might have ended the war, was altogether wasted. Later some were bogged in Flanders mud, to the great delight of the contemporary military mind. If the tanks could not be prevented, the next best thing from the old army point of view was to spoil them...Nowadays things have altered in form but not in essence and the British military intelligence, with its unerring instinct for being two decades out of date, is plainly and dangerously tank-mad.<sup>40</sup>

He aligns the tank's development with the Admiralty through Churchill rather than through the army, with no mention of Swinton. Wells drops his earlier assertion that the tank was a civilian invention forced on the military. Additionally, he continues his complaint against the military for not employing his imagination in the war effort, and for only slowly accepting the tactical advantages of the tank in modern warfare. He also repeats Hugh's reports in *Mr. Britling Sees It Through* on the inefficiencies and waste of the modern British military from an enlisted soldier's point of view. Wells was never directly involved in the fighting, but Hugh's sentiments mirror those found in works such as Edmund Blunden's *Undertones of War* (1928) and Frederic Manning's *The Middle Parts of Fortune: Somme and Ancre, 1916* (1929).<sup>41</sup> Therefore, Wells reverses his earlier sentiments about the military involvement in the development of the tank, perhaps referring to Churchill's original Landships Committee, but he maintained his long-standing criticism of the British military-industrial complex in general.

The penultimate engagement between Wells and Swinton regarding the inventorship of the tank occurred in court almost a decade after each of their autobiographies. It began with Swinton reiterating his claims of inventing the tank on 15 February, 1940 on the BBC: 'I put this idea forward, and so the tank was conceived.'<sup>42</sup> In response, Wells protested against Swinton's assertions when he

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<sup>40</sup> H. G. Wells, *Experiment in Autobiography: Discoveries and Conclusions of a Very Ordinary Brain* (Since 1866) (New York: Macmillan, 1934), 583-4.

<sup>41</sup> Edmund Blunden, *Undertones of War*, (New York: Penguin, 2000), Frederic Manning, *The Middle Parts of Fortune: Somme and Ancre, 1916* (New York: Penguin, 1990).

<sup>42</sup> Ivor Halstead, *The Truth About Our Tanks, and the Great Libyan Battles* (London: Drummond, 1943), 26.

‘wrote to the *Listener* disputing this claim and insisting that the notion had in fact been first put forward in his *Strand* magazine story of 1903, ‘The Land Ironclads’.<sup>43</sup> Swinton sued Wells for libel over his published remarks in the weekly BBC magazine.<sup>44</sup> BBC officials attempted to mediate the suit with a settlement, but Wells refused arbitration and a monetary settlement. Swinton won the suit, but through the proceedings, ‘the main issue had been lost in a maze of irrelevancies’, and Swinton was awarded ‘damages . . . for the defamation of his character, not for proving that he had invented the tank’. Wells was bitter about this result as well as the way in which the BBC attempted to settle rather than support Wells’s claims. This disappointing outcome for Wells demonstrated for Wells the distance between the public regard for Wells as a scientific, technological, and social prophet, and his inability to obtain official recognition of his ‘inventive talents’.<sup>45</sup>

Wells, however, could not resist having the last word, especially in print, in his memoir *'42 to '44*:

When the Diplock pedrail came along as an agricultural tractor at the outset of this century (1903), it was an obvious deduction (pace the worthy Sir Ernest Swinton who is still (1943), I find, coyly suggesting himself as the inventor of the tank\*) that land ironclads would presently fight great fleet actions on land.

\*In a small leaflet publication in French, Harold Keeble has shown me, he lapses into this delusion periodically. The facts of this case are to be found in Mr. Ivor Halstead's *The Truth about Our Tanks*.<sup>46</sup>

Here, Wells refers again to the pedrail technology that originally inspired him to write ‘The Land Ironclads’. One technological element of the tank existed in the form of pedrail technology, but the ‘obvious deduction’ about how to unite pedrails with other technologies of war came about through Wells’s imaginative extrapolation. It is important to also consider Wells’s footnote that points to ‘the facts of this case’ being in Ivor Halstead’s *The Truth About Our Tanks*. Wells’s *'42 to '44* would have been released following the court case with Swinton, which means that Wells had not given up his claims despite the court case brought against him by Swinton. I believe that Wells uses this passage to present ‘facts’ that were lost or unimportant to the legal issue in Swinton’s suit against him.

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<sup>43</sup> MacKenzie and MacKenzie, 432.

<sup>44</sup> *The Listener* was published from 1929 to 1991.

<sup>45</sup> MacKenzie and MacKenzie, 432-3.

<sup>46</sup> H. G. Wells, *'42 to '44: A Contemporary Memoir upon Human Behaviour During the Crisis of the World Revolution* (London: Secker and Warburg, 1944), 10.

Halstead's *The Truth About Our Tanks* is an early history of the British tank's development and use in the First and Second World Wars. Halstead expertly works through the many contributors to the invention of the tank, which he characterises as 'the 'Tank origins' controversy – a field on which many distinguished men have fought each other lustily' (25). Wells and Swinton are featured as the two primary contenders in Halstead's narrative – the former through his 'The Land Ironclads', and the latter through his own popular accounts for which he 'will be forever associated in the public mind with the creation of *the* tank' (26). Halstead is generally even handed with his history of tank development, but he writes to excess about Wells's role in the development of the tank. First, he dedicates his book to 'my friend H. G. Wells' and juxtaposes 'The Land Ironclads' with early tank production accounts by Swinton and others in the chapter titled 'The Inception'. Halstead's tact is not to reveal the interconnection of science, technology, and culture, but instead this early section of his book is a celebration of Wells and his early imaginative extrapolation in 'The Land Ironclads'. Ultimately, Wells triumphs as the victor in the contest for inventorship of the tank according to Halstead: 'It is clear that the first practical 'tank' was born in the mind of Mr. H. G. Wells and launched him into an imaginary warfare before the present century was four years old' (24), and 'the only 'tank originator' who does not appear to have been forestalled by anybody is Wells' (28). As a contemporary writer and extrapolationist, Wells took his readers into the future, but the networks of science, technology, and culture, to which Wells and Swinton were both party, extend broadly into the present and deeply into the past.

As strongly sounded as Wells's and Swinton's claims of inventorship of the tank were during the first half of the Twentieth Century, there is no definitive way to establish and prove either 'inventor' as the originator of the tank. The modern armored combat vehicle or tank has come to represent a tension between authors and inventors in a way much different than the disputes between scientist-engineers such as Tesla and Edison, or Gray and Bell. In the case of the tank, its presence as an idea circulating within culture for many years and most pronounced perhaps in Wells's 1903 story prior to its physical creation makes it a unique case in the history of science and technology. The debate over inventorship comes about at the nexus of culture with science and technology, perhaps as a result of the development of early science fiction by Wells – literature that depends on science and technology as being central to its plot. It bears repeating that the tank has a genealogy in both fiction and real world technology. Before Wells's 'land ironclads', there was Leonardo da Vinci's widely circulated inverted-spinning-top design of a mobile tank-like war machine that was designed to move armed men safely about in battle. Long before the real world tank, Roman warriors formed the *Testudo*, or tortoise, which was a formation of soldiers who interlocked their shields to form a box, protecting them from missile attacks while moving about the battlefield safely. With the advent of larger and heavier military technology including guns and cannons, it was widely believed the next step would be to meld mobility with weaponry. However, the First World War introduced other

problems, including trench warfare and the tactical destruction of roads and railway lines. Thus, Bloch and others realised that armour, weaponry, and bridging capability would need to be fused together into a single fighting machine. It was an idea that Wells took up in fiction, and Swinton and others developed on drafting boards and in the machine shop. Wells brought these together in his widely read early science fiction story, and Swinton suggested such a fusion in his work in the War Office and in the Admiralty's Landships Committee. These two 'authors' or 'inventors' came from opposite ends of the creative spectrum, but they share two common denominators: both demonstrated a distinct ability to imagine the useful mixing of technologies to solve a new battlefield problem, and both desired to record his name as the sole inventor of the tank.

The tank's authors and inventors, including Wells and Swinton, but obviously encompassing many others before and during the development of the first tank, created a formidable weapon of war that also came to emblemise the conjunction of different networks of science and technology. The tank represents the beginnings of a systemic approach to modern technological development that reaches fruition in the Manhattan Project and the atomic bomb in the Second World War. The tank is a precursor to the modern shift from singular inventors to the committee, combined effort and synergistic cooperation. Wells, as the classical 'lone inventor', had a significant vision of future warfare, which he developed in 'The Land Ironclads'. Swinton, on the other hand, was a visionary manager who synthesised divergent technologies into a single war machine by directing men and routing the materials needed for its development and construction. Swinton and his tank project prefigure other important war project organisers including General Leslie R. Groves and J. Robert Oppenheimer.<sup>47</sup> Wells and Swinton each played a part in the development of the tank, but to say that one or the other is the definitive inventor of that technology is a mistake, because these two people were within a much larger multilayered network of culture, science, and technology. They were two people among many others who played some part in the genesis of the tank during the First World War. Thus, the question of inventorship shifts from 'who invented the tank', to 'how did the myriad networks of people and ideas crystallise in the genesis of the tank?'

More investigation is required to uncover the multiple and contentious histories of the tank. One intriguing parallel between Swinton and Wells has to do with the fact that Swinton served as the official British war correspondent for the Western Front prior to his work with the tank, and Wells's narrator in 'The Land Ironclads' is an opinionated war correspondent whose allegiance shifts toward the progressive engineers in the end. Wells, of course, did not have Swinton in mind when writing his short story, but Swinton's familiarity with the story might

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<sup>47</sup> General Leslie R. Groves managed the Manhattan Project under the U.S. Army Corp of Engineers, and J. Robert Oppenheimer coordinated the scientific and experimental side of the project.

provide another level of investigation to this controversy.<sup>48</sup> Other questions that should be examined include: how many other British officers and engineers involved in building the first tank also knew of Wells's work? What other contemporary influences might have led to the development of the tank in Britain? Another project would involve France's independent tank or *chars* development during the First World War. What cultural cues and ideas might have played a part in its creation?<sup>49</sup> These histories will undoubtedly continue to yield hidden circuits and pathways of understanding about the scientific, technical, and cultural implications of the convergence of science fiction and new technologies.

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<sup>48</sup> Williamson, 102, identifies Stephen Crane as a possible source of inspiration for Wells's war correspondent.

<sup>49</sup> Interestingly, Swinton asserts in 'The Tanks', 572, that the French illustrator, Albert Robida, predicted tanks in 'La Caricature' in 1883. The source of Swinton's knowledge isn't provided in his *The World's Work* article, but in the pamphlet reprint, it is given as the *Strand Magazine*, June 1917! It seems obvious that Swinton had read the *Strand*. See *The "Tanks"*, 12.