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How to finish with Armageddon? The history and consequences of industrial-scale, old-ammunition destruction in the interwar period on the western front

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CATCHY TITLE:
Unexploded Ordnance and Militarized Landscapes

When wars end, states and militaries require comprehensive disarmament and reconstruction strategies that address the colossal political, economic, and social challenges involved in making peace. Scholars such as Michael Neiberg, BLANK, and BLANK, have focused on high-level treaty negotiations, international relations, and veterans rehabilitation, but as the papers in this panel show, the legacies of war also affected the environment and society profoundly.

In the aftermath of war, new national and geographic boundaries are defined, former battlefields are cleaned up, and devastated landscapes are remediated before the mass of displaced people return home. Moreover, the tools of death and destruction do not simply vanish, as captured weapons and surplus ordnance must be collected and catalogued ahead of final disposal.

How to finish with Armageddon?

The history and consequences of industrial-scale, old-ammunition destruction in the interwar period on the western front

Daniel Hubé

During the First World War (WWI), the power, accuracy, firing rates and ranges of artillery reached an unprecedented scale. When hostility ceased 1.7 million tonnes of Excess, Obsolete, Unserviceable Ammunition (EOUA) had been abandoned by all belligerents. Plus around 25% of the one billion fired artillery projectiles had failed to detonate, meaning that the amount of old ammunition (OA) grew when Unexploded Ordnance (UXO) emerged out farm fields when ploughing started again. The destruction of OA quickly became an urgent need during postwar reconstruction, but such a huge task had never been undertaken before. The French and Allied armies started disposal and destruction of OA using common open-detonation methods. Stacked OA was blown in place using an explosive charge. From 1920, civilian companies took over this work on an industrial scale. New methods (including defuzing, open-burning or washing-out) for safely breaking down a large variety of ammunition were developed to recover valuable scrap materials.

This paper draws on recent and detailed archive research which indicates that approximately 2.5 to 3 million tonnes of OA were destroyed in France during the interwar period. These operations had serious health and environmental consequences. Numerous workers were wounded or killed during operations that also caused severe soil contamination. To this day, no vegetation grows on the location of some former ammunition destruction factories. Furthermore, there is some evidence indicating that regional scale perchlorate groundwater contamination in northeastern France may be linked to the destruction of OA after WWI. Nevertheless, industrial scale ammunition destruction facilities have disappeared from the collective memory, but the contamination from a hundred years ago still endangers people, threatens land-use planning, and the management of water resources. This original paper discusses the reasons why this history of demilitarization has been forgotten.

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Education

Master of science in applied geology and prospection. 1995.

Master's degree. French national high school for applied geology. Exploration mission for gold in french Guyana rain forest. 1996-1997.

2016 – today. Ongoin. Auditor at two workshops on WWI of the EHESS high school (french school for social studies, Paris. Director : Stephane Audouin Rouzeau).

To come : 2019-2020. Thesis on contemporary history. Old ammunition destruction operations after the Great War. Origine, history and environmental and socio-political consequences of an industrial postwar period.

Publications (on history)

Hubé, D. Industrial scale old chemical ammunition destruction near Verdun. A forgotten chapter of the Great War. The journal of First World War Studies. December 2017.

Submitted : Katarzyna Chmielińska, Daniel Hubé, Tobias Bausinger, Markus Simon, Gilles Riviere, Patrik Fauser, Hans Sanderson. Environmental contamination with cyclic mustard gas dissipation products. Science of Total Environment.

In preparation :

Hubé, D. Bausinger, T. How to finish with Armageddon ? Challenging with the industrial scale destruction of old ammunition from the Great War on the western front. The journal of First World War Studies.

Hubé, D. Ollivier, P. Are battlefields of the Great War hundred year old sources of contamination of groundwater in the northeastern France ? The case study of Argonne. Science of Total Environment.

French national state Mission for the WWI Centenary : [tise-pour-une-evaluation-de](#)

<https://centenaire.org/fr/la-destruction-des-munitions-chimiques-apres-1918-lexemple-de-spinco-urt>

<https://centenaire.org/fr/espace-scientifique/pays-belligerants/1-une-grande-guerre-industrielle-e>

<https://centenaire.org/fr/espace-scientifique/societe/perchlorates-elements-historiques-et-dexper-t-une-industrie-en-guerre>

<https://centenaire.org/fr/autour-de-la-grande-guerre/publications-recentes/14-18-tremblements-d-e-guerre-les-geologues-au-coeur>

Books (in french)

« Sur les traces d'un secret enfoui. Enquête sur l'héritage toxique de la Grande Guerre »
Préface JY LeNaour. Editions Michalon. 2016.

14-18 Tremblements de guerre. Les géologues au cœur de l'histoire. Co-edition
BRGM-ECPAD. Mars 2017

TITLE

Alex Souchen

During World War II, Allied war factories produced more than 60 billion rounds of ammunition, bombs, and shells. However, when the war ended in 1945, not all of this ordnance was expended or needed for postwar operations, while the bulk of captured enemy weapons added to the surpluses accumulating around the world. Victory triggered a global “disposal problem” that the Allies addressed by dumping hundreds of millions of tons of ordnance into the oceans.

Drawing from a wide range of archival sources and the latest scientific research, my paper will explore the environmental history of underwater munitions by focusing on three related topics. First, it will profile contemporary knowledge of toxicity and the environmental ethics of Allied leaders in order to explain why they chose dumping over other available disposal methods and polluted the oceans for disarmament purposes. Second, the paper will offer an overview of the global scale of dumping operations and highlight particular areas of concern, where large concentrations of chemical and conventional munitions were dumped. Finally, the paper will discuss the evolving ecological and human health risks of underwater munitions. Dumping munitions in the oceans never eliminated their deadly nature; instead it delayed and dispersed the violence across time and space. Corroded bombs can spontaneously detonate or leach toxic chemicals and carcinogens into the food chain. They also threaten the offshore economy and energy industries, while fishermen and tourists are frequently injured by encounters with mustard gas and incendiaries. By shedding light on the history of munitions disposal, my paper offers new insights into the history of warfare and the military’s impact on marine environments. In doing so, it discusses the evolution of disposal strategies and identifies the socio-economic costs of military pollution

ALEX SOUCHEN

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Education

Doctorate of Philosophy in History, University of Western Ontario, 2016.

Master of Arts in History (Thesis), University of Ottawa, 2010.

Honours Bachelor of Arts with Specialization in History, University of Ottawa, 2008.

Publications

War Junk: Munitions Disposal and Postwar Reconstruction in Canada. (Vancouver: UBC Press, May 2020).

“Recycling War Machines: Canadian Munitions Disposal, Reverse Logistics, and Postwar Economic Recovery.” (Submitted for peer review with *Business History*).

“Something Fishy? Underwater Munitions and Unexplained Die Offs in Marine Environments.” *International Journal of Maritime History*, 30(2) (May, 2018): 355-361.

“‘Under Fathoms of Saltwater’: Canada’s Ammunition Dumping Program, 1944-1947.” *Canadian Military History*, 26(2) (Fall, 2017): 1-34.

“The Culture of Morale: Battalion Newspapers in the 3rd Canadian Infantry Division, June-August 1944.” *The Journal of Military History*, 77(2) (April, 2013): 543-567.

Work and Teaching Experience

Current Position: AMS Postdoctoral Fellow, Trent University, Frost Centre for Canadian Studies and Indigenous Studies, 2019-20.

Part-time Professor, Department of History, University of Western Ontario, January-April 2019. Course taught: The Two World Wars (HIS2177B).

Project Coordinator, International Dialogue on Underwater Munitions (IDUM), The Hague, Netherlands, 2018-19.

Select Scholarships, Fellowships, and Awards

AMS Postdoctoral Fellowship, Trent University, 2019-20.

Publication Grant, Awards to Scholarly Publications Program (ASPP), 2019.

SSHRC Postdoctoral Fellowship, 2016-18.

Professional Memberships

American Society for Environmental History.

Canadian Historical Association.

Canadian Society for the History of Medicine.

Society for Military History.

The Unintended Beauty of War: the Biodiversity of the DMZ

Louise Tumchewics

After three years of conflict, the Korean War formally came to an end on 27 July 1953. The United Nations Command, Chinese People's Liberation Army, and North Korea People's Army agreed to an armistice. The agreement effectively divided the two Koreas into two countries, separated by a 250-kilometre long (160 mile) 4-kilometre (2.5 miles) wide demilitarised zone, roughly tracing the 38th parallel. Although most troops and heavy weaponry were removed from the area, it remains one of the mostly heavily mined areas on earth, consequently making a so-called 'demilitarised' zone one of the most militarised landscapes in existence.

Millions of landmines have made the area impassable for humans yet allowed an abundance of animal and plant life to flourish, undisturbed by human activity. The border region is home to the Siberian flying squirrel, black bears, golden eagles, water deer, and the iconic, and endangered, red crane. War, and its aftermath, have created a rare refuge that preserves that natural history of the Korean peninsula.

For decades, both Koreas view the presence of landmines in the DMZ as integral to their national security. In recent years, South Korea has pursued policies to demine and develop the DMZ and neighbouring regions in an effort to promote détente between the two countries. However, demining could prove a lengthy task, given the sheer volume of UXO, and the movement of the soil in the intervening decades. Development – in the form of roads through the area, and attendant human presence, would disrupt the fragile ecosystem. Areas could be set aside for protection, but North Korea views biosphere reserves in the DMZ as potentially hostile land grabs. Disrupting the mines could disrupt fragile relationships between the two countries. This paper explores the challenges of balancing the preservation of ecological history with the promotion of peace.

1 PAGE CV FOR LOUISE