Anthropologica

Anthropologica

The Container Thinks It's Upside Down, and Other Stories of Automation

Mathieu Lamontagne-Cumiford et Hannah Lillis

Volume 65, numéro 1, 2023

URI : https://id.erudit.org/iderudit/1109806ar
DOI : https://doi.org/10.18357/anthropologica65120232610

Aller au sommaire du numéro

Éditeur(s)

University of Victoria

ISSN

0003-5459 (imprimé)
2292-3586 (numérique)

Découvrir la revue

Citer cet article

Lamontagne-Cumiford, M. & Lillis, H. (2023). The Container Thinks It's Upside Down, and Other Stories of Automation. *Anthropologica*, *65*(1), 1–15. https://doi.org/10.18357/anthropologica65120232610

Résumé de l'article

Un conteneur ne peut pas parler, mais il peut désormais se plaindre grâce à la numérisation et à l'automatisation. La pandémie de COVID et les pressions exercées par ses conséquences sur l'économie mondiale ont soudainement attiré l'attention sur la chaîne d'approvisionnement et l'industrie du transport qui l'alimente. Alors que les pénuries et les retards attiraient l'attention, les acteurs du secteur ont accéléré la numérisation et l'automatisation de l'industrie. Des gares de triage aux entrepôts, des ponts des énormes navires porte-conteneurs aux bureaux des immeubles de bureaux ; une poussée concertée pour l'automatisation du travail est en cours. à partir de l'expérience de l'industrie et des interlocuteurs issus d'un large éventail de l'industrie logistique, nous discutons des pressions et des facteurs de motivation qui sous-tendent cet effort.

The Container Thinks It's Upside Down, and Other Stories of Automation

Mathieu Lamontagne-Cumiford and Hannah Lillis

Abstract: A container cannot speak, but thanks to digitization and automation, it can now complain. The COVID pandemic and the pressures leveraged by its consequences on the global economy have brought sudden attention to the supply chain and the transport industry which powers it. While shortages and delays drew attention, industry players accelerated the digitization and automation of the industry. From the staging grounds of rail yards to warehouse floors, from the decks of massive container ships to the cubicles of office buildings, a concerted push for the automation of work is underway. Drawing on industry experience and interlocutors from a wide breadth of the logistics industry, we discuss the pressures and motivating factors that underpin this effort.

Keywords: automation; supply chain; shipping; transport; digitization

Résumé : Un conteneur ne peut pas parler, mais il peut désormais se plaindre grâce à la numérisation et à l'automatisation. La pandémie de COVID et les pressions exercées par ses conséquences sur l'économie mondiale ont soudainement attiré l'attention sur la chaîne d'approvisionnement et l'industrie du transport qui l'alimente. Alors que les pénuries et les retards attiraient l'attention, les acteurs du secteur ont accéléré la numérisation et l'automatisation de l'industrie. Des gares de triage aux entrepôts, des ponts des énormes navires porte-conteneurs aux bureaux des immeubles de bureaux ; une poussée concertée pour l'automatisation du travail est en cours. à partir de l'expérience de l'industrie et des interlocuteurs issus d'un large éventail de l'industrie logistique, nous discutons des pressions et des facteurs de motivation qui sous-tendent cet effort.

Mots-clés : automatisation ; chaîne d'approvisionnement ; transport maritime ; transport ; numérisation

The term "supply chain," brandished as often as it has been recently, makes the whole process seem rather orderly. Through the power of metaphor, we are encouraged to imagine a series of links, all well and orderly bound to each other. From factory to port to ship to port to truck to my front door, how convenient! What is commonly referred to as the supply chain will be treated herein as all actions required to move goods (raw materials, bulk, or consumer-destined) between industrial and consumer-facing actors. To specify through exclusion, we are interested here in the work required to move things between non-consumer entities. Instead of a chain, think of a web. This is, in the words of our interlocutors, the transport industry. A tangled network of firms, of people, of computers. A dispersed array of newly implemented algorithms, the myriad sensors that feed them, and the paperwork that they fall back on. An assembly of trains, ships, containers, truck drivers, office workers, CRMs (Customer Relationship Management), and other entities, all acting with some mild measure of coordination to move items from here to there. Material logistics in a post-globalized world is a Gordian knot, and an army of managers approaches brandishing automation as their Herculean sword.

As one anthropologist and another historian turned transport professional living in Montreal, the port and its constant flow of containers, ships, and goods is a regular fascination for us. Long lines of containers move sluggishly by the water on heavy steel rails, pushed back and forth, offloaded from ships to be carried away piecemeal on the backs of semi-truck trailers and diesel locomotives. When COVID and its accompanying lockdown struck, ships would pile up in the port, things would move too fast or too slow; the transport industry was heavily disrupted. From an anthropological perspective, the impacts were fascinating in their wide-reaching effects. A container delayed in Montreal due to a damaged gooseneck, a missing seal, a broken corner casting, or a crane operator sick with COVID and unable to work, might cause ripple effects thousands of kilometres away in the mundane struggle of someone's life. From a historical and logistical perspective, it is fascinating to consider how the interlocking systems of technology and automation work. These systems, with their advantages and challenges, mimic the socio-economic landscape of the present day, while also having been wrought by the influence of the past. The viewpoint and agency of human beings are valuable and fascinating, as the human experience is such a potent source of information for the consequences and applications of this change. In this way, the application of ethnographic practice stands to contribute significantly to studies on the matter. Together, we set the combination of our insights to one of the most hotly discussed topics in the transport industry.

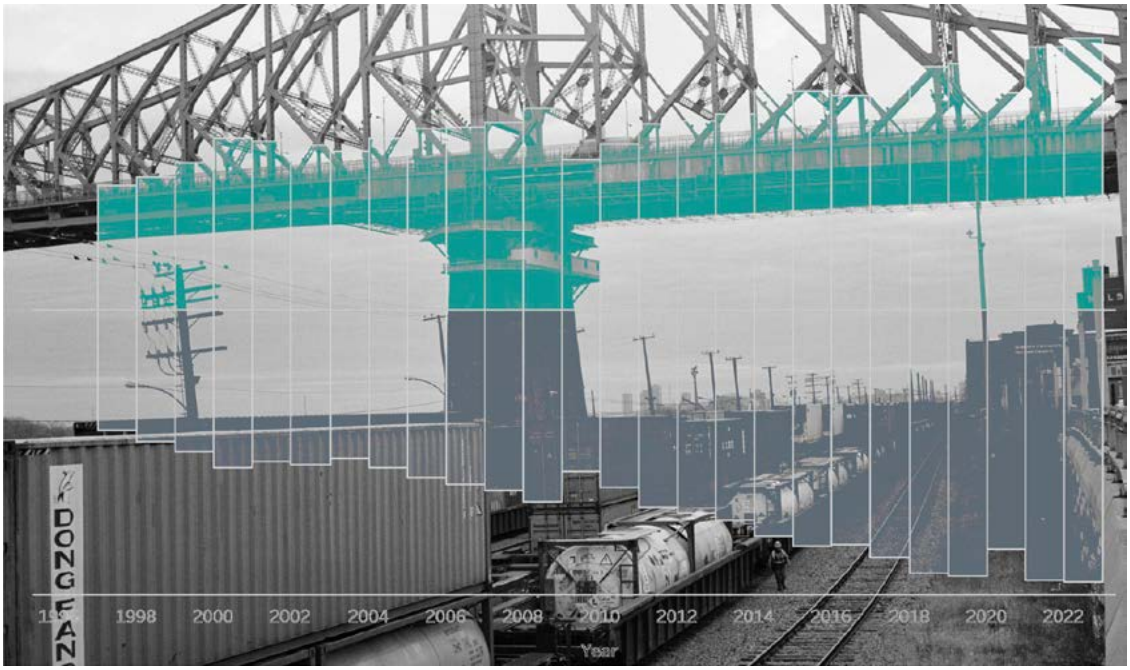

Figure 1. Rail worker. Photo by author, data from Statistics Canada (2022)

Herein then is a brief examination of the supply chain and its mot-du-jour: automation. Built on the back of anecdotes, musings, and in-depth conversations with professionals from several levels of the logistics industry, we rely on the perspectives of friends and contacts.[1] In this piece, we are seeking to establish a preliminary understanding of automation and the impact that the pressures brought on by the world's response to COVID-19 have had on its adoption. We aim to do this by first offering a history and contextualization of automation, exploring the specific way that the notion has been introduced to the shipping industry and to which the philosophical goals its proponents and detractors hold. With this established, we move to describing some of the changes brought on during the COVID pandemic. In this same section, we delineate those changes that were in process long before current disruptions and move to codify our current situation as one of acceleration, not genesis. Finally, we have broken up these sections with a handful of data images. Combining photographs from one author and the data-visualization skills of another, these are intended to encourage the reader to reflect on the sometimes discordant connection between data (as the foundation of automation) and the often analogue process of work. From containers (referred to in the industry also as "seacans" or simply "cans") that have learned to lie, to disappearing inventories; removing human beings from the work has created a whole new tangle of incertitude.

A little context goes a long way. While anthropology's interest in the transport industry might be described as lacking, historians have a chronologically rich picture to paint. Racked with challenges as these last two years have been, a short-term perspective can be forgiven. However, when discussing automation and its significance in the shadow of the post-COVID era, we should contextualize this as simply one phase within the broader chronology of trans-Atlantic and domestic trade. This goes hand in hand with a longer view of the evolution of the North American supply chain. During its initial large-scale expansion during the nineteenth century, Canadian transportation was peppered with challenges, ingenuity, and risk.[2] At that time, the sprawl of the modern North American "metropolis" could be generously described as embryonic, yet the cross-Atlantic trade we recognize today was well established.

Staying specific to the Canadian context, as early as the 1860s, during what has been termed the "first wave of Globalization," steamship transportation ran with fortnightly departures, serving ports where the finishing touches on the quays had been completed barely 20 years earlier (Estevadeordal et al. 2003). Within many large transportation companies today, we can still see something of an industrialist ancestry. Firms present at the very opening of modern domestic and steamship transportation can be traced as direct ascendants to the modern supply chain giants of which our interlocutors make mention in this paper. A ready example is the well-known Beaver Line, which by the early 1870s was a leading steamship line operating a fortnightly transatlantic service from Montreal to Liverpool (at the time, this was as swift as freight could move that distance). At its demise, this line was bought out by a company which successively became Canadian Pacific Railway (CP Rail) in 1903. In 2005, CP Rail sold their ships but kept the beaver symbol that we still recognize today (Valorzi 2005). This shifting landscape of mergers, shuttering, and purchases is a historic feature of the Canadian transport landscape, which is still accelerating today. Armed with post-COVID-19 cash, many small, or even medium, players have now been consolidated under existing banners.[3]

The transportation of goods and the development of the infrastructure to do so has been a fundamental underpinning of the Canadian state since before its inception. Driven by the expanding colonial appetite of developing European industrialization, a nation of rail lines and eventually, highways, was built to feed its ocean ports. As capitalism globalized and industrial production found itself crossing another ocean, we approach the present day. When we refer today to innovation and disruption, the market landscape of established

transportation lines we see are in fact far more recently emerged than they appear. Those we consider to be the steadfast and ironclad warehouses of the tangled supply web of the contemporary supply chain are in reality barely cemented players, less than two centuries old. Indeed, over the last 50 to 75 years, these players themselves have been at the forefront of a different kind of innovation, a physical and mechanical one preceding the "big tech" era, where there was a race to deliver freight at a faster and faster pace. These developments, such as the pivotal shift to containerization, massive ships, and more, have culminated in the contemporary shipping industry.

Indeed, this growth has caused what has been called a "blitz for bigger vessels," where the industry has practically been yoked to a fervent obedience of the economies of scale to achieve its ideal expansion and reduce costs (Sànchez et al. 2021). Even the scales of measurement themselves seem to be running short on words to describe these physical size progressions. Having its genealogy originally inspired by the geography (or enlargement thereof) of the Panama Canal, in 2006, ship-building nomenclature departed from these references to finally auto-define by referring to its own titanic sizing. Ship classes passed from the Neo-Overpanamax to the almost comically termed Very Large Container Ship (VLCS), to the even more bizarre Ultra Large Container Ship (Rodrigue 2020). Eventually, the infrastructure and geography of the world fought back. During the COVID pandemic, the supply chain was further strained by the now infamous Evergiven, an Ultra Large Container Ship. Attempting to manage its bulk, the ship eventually lost its adventure with a stiff crosswind and grounded itself across both banks of the Suez Canal. Due to intense market pressures on shipping, a line of more than 150 vessels quickly formed, and some of the largest container ships in the world were victims to their own gigantic evolution. No matter what their size, these ships had to reconsider their paths and throw all costs to the wind, repeating history to make the more difficult (and slower) journey around the Cape of Good Hope to arrive at their destinations (Safi et al., 2021). In some ways, these trends are indicative of the responsive nature of capitalist development. Even now, the authority managing the Suez Canal recently announced further enlargement to accommodate these ships while a recent McKinsey report languorously supposes "50,000-TEU [vessels] are not unthinkable in the next half-century" (Harper 2021; Cornwell et al. 2022).[4]

After the standardization afforded by the adoption of the shipping container in the 1970s, digitalization and its accorded automation has been envisioned as a logical next step (Leivestad 2022). As discussed later, automation is most effective

when coupled with repeatable, expected processes. A transport industry in which significant volumes of cargo are functionally interchangeable is ripe for automation. When COVID emerged on a global scale, causing massive labour shortages, purchasing shifts, and the rerouting of significant industrial and logistical resources, a strong impetus was felt by many firms to quickly adopt automated processes. Often, these addressed the issues mentioned, but many were developed following the more philosophical pursuit of efficiency which permeates the capitalist project. This vision, of an optimistic future of automatic work and guaranteed pay-off, seems devoid of the labourers whose mundane interventions ensure the continued operation of the system. Whatever the inspiration, processes and practices have been put in place over the last years that have rendered the shipping and delivery of goods more automatic and have brought on a shift in labour practices which will continue to evolve.

We should not be surprised that the drive for automation surged in the shipping industry to coincide with the prominence of other data-driven innovations in capitalism. Blockchain technologies, data collection at a nearly prescient level, and the (ultimately unsuccessful) appearance of virtual assistants could all equally be considered manifestations of a digital marketplace saturated with the most crucial element required for automation: gluttonous volumes of data. Automation requires information. Decisions premade are only accurate when as many possible factors can be included in the process as possible. Knowing each factor requires as much information as possible. Better data, theoretically, leads to better automation.

A concurrent impetus for change therefore inspired the shifts our interlocutors mentioned in the supply chain. Innovation is a ready discourse in contemporary capitalism, and a tide that seeps into all places but is heavily influenced by current trends and fashionable pursuits.

When some players achieve success, projects snowball across the industry and uptake improves. Fashion is often fickle, and discordant co-innovation can impede overall cooperation. When Maersk, the second-biggest steamship line in the world, whose ambition had once been to digitize the supply chain and set a new industry norm, quietly closed its blockchain project TradeLens, they drearily noted "the need for full global industry collaboration has not been achieved" (Kjærgaard-Winther 2022). In view of the current plethora of digitization in logistic technology, such a statement reflects an internally focused sentiment. Indeed, from 2020 to 2021, McKinsey reports a giant proliferation of logistic tech start-ups as funding within the industry nearly doubled during that

time. In the wake of the pandemic, blockchain technology could not succeed where the freight forwarder did not (Hausmann et al. 2022). One thing is certain: any projects led by traditional transport giants and that hinge on any form of decentralization or, alternatively, that now terribly unfashionable word, the blockchain, have fallen far out of favour in the wake of the 2022 crypto crash.[5] This is, somewhat ironically, without any executive consideration of such projects' real-world advantages and specific benefits of industry applications.

The current push for automation in shipping and logistics is an intensification of efforts that began over a decade ago. All of our interlocutors found it important to mention this. Doug, who works in rail transport and is responsible for customer service, mentioned that his work was some of the first to see the implementation of automated processes. Over the course of our conversation, he noted how massive volumes of customer interaction have been streamlined into efficient, automated processes. The shift has been significant and has intensified as technologies are implemented, that allow for higher volumes of data and greater tracking of tasks. As COVID struck, Doug and his team found themselves almost invisible, as the work they had automated chugged along on its virtual tracks. Jack told us a similar story. Working in the trucking business for over three decades, he recounted how his daily routine used to be saturated with filling out forms, punching codes, and collecting carbon copies. As a driver for a company delivering fuel, errors are either costly or deadly. Punch the wrong code at the refinery and an entire fuel station's reservoir might be contaminated. Load the truck incorrectly and the imbalance might cause an explosive accident.

As digitization became widespread in the workplace, it also crept into Jack's routine. A fuel pump that once took punch cards now automatically mixed the correct volumes upon reading a bill of lading. Handwritten carbon copies became emailed documents received simultaneously by all parties. Where the most impressive change happened, Jack told me, was in the dispatch office. Dispatch is one of the most labour-intensive and difficult aspects of the transport industry. It entails ensuring that the correct goods are shipped to the correct destinations, that safety and customer norms are respected, and coordinating fleets of trucks.

"Everything used to be handwritten. Now the dispatch looks like a space centre," jokes Jack, a chuckle ringing out across our telephone call. Walls full of screens tell dispatchers a week in advance which station will require how much fuel. Drivers arrive at refineries where the systems have already received

and mixed the recipes, and deliver loads along routes that appear automatically in their GPS. Automation is seemingly inseparable from the computer for our interlocutors. When asked about the first intrusions of automation into their work, all our interlocutors referenced digital processes in some way. For Jack, automation not only intruded into his work at dispatch, it also intruded in the form of computerized systems that took over from the not-so-distant days of endless code punching at refineries. Interestingly, however, when we spoke about the trucks themselves and the emergence of increasingly computerized vehicles, the word did not appear to hold the same weight. Sure, the automatic transmission and emissions sensors kept breaking, and a computer mostly ran the truck, but that was not what came to mind when we asked how automation had become a part of his work. Such a view might have to do with the invisibility of digitally automated processes, only manifesting when something goes wrong and humans have to intervene to correct the consequences.

Digital processes have allowed for an incredible amount of automation in what used to be complex and error-prone work. Computers do a great deal of the thinking and everything runs smoothly until they decide to cause problems. Then, Jack told me, all hell breaks loose. Out come the phones, the pads of paper, and the space-centre dispatch erupts into the chaos of a trading floor from an eighties finance movie.

Efficiency. More often than anything else, efficiency was the word we heard associated with the automation of work. Our interlocutors invariably brought the term to bear when musing on the value of a newly (or hopefully newly) automated task. Would it not be so much more efficient if it was automated? It is more efficient now that computers are involved!

Jen is a big proponent of automation. As a high-level executive at a major industrial operation, she has worked at almost every level of the logistics industry. Now, she develops and implements strategies to make manufacturing massive projects more efficient. No process is beyond her interest. With a broad smile and powerful charisma, when Jen speaks about automation, it is hard not to get swept away by her optimism. “Repetitive work, predictable work, there is so much of our work,” Jen tells me, “that computers do so much better than people.” Some processes just follow the same steps over and over again. Automating these frees humans to do the thinking work, to do things that require creativity, ingenuity, and synthesizing complex ideas.

Automation is not always easy, though. There is a great deal of adaptation required. Not only will workers need to relearn what they do, but the research that goes into mapping out processes for automation is significant.[6] Doug spoke similarly about automation he has seen appear in his industry. Rigorous and lengthy examinations of each minute step of a work process are required to produce a reliable automated system. Not every firm can afford this, which partially explains the patchwork implementation of automation strategies across the industry. Importantly, automating something is not, functionally, about rendering onto it some form of intelligence or independence. Automation can be conceptualized under a dualistic framework of material agency and the codifying of a process. Decisions are (relatively) simple, following the logic of predetermination based on an expected series of inputs and an acceptable collection of outcomes. Therefore, there is an inseparable connection to the collection of stimulus and the consequential appearance of decision-making. To give an industry example, consider an automated notification system. Such a system might use simple sensors to collect data on excessive movement of a container and if values exceed a threshold, a notification to nearby agents would be triggered by a database. With such an automation system in place, the container can be said to have gained a certain agency: it is equipped to tattle on its handlers. At the same time, the process is behaving as expected, following a preconceived path of possibility. Both of these realities are true. The container in our example is both agent and entity. We might brush off such a position as overly philosophical, but we are not the ones receiving instructions from a steel box.

While intensifying automation and digital processes might produce unexpected scenarios which imbue some semblance of agency, it is important that computers cannot cause problems of their own accord. What is experienced as agency, as unexpected action, is the product of either a deviation from a predefined process, or a struggle between two competing processes that produce results with which the computer cannot cope. These processes form digital webs, which at some point in the past were automated by an equally invisible hand. These invisible hands are in fact simply past work, disconnected from the expected flow of temporality by codification on digital platforms. That which has been diligently constructed is now the foundation upon which our current understanding of modern automation and indeed logistics stands. The development of automation in the digital era is a development of self-actuating patterns and the ghostly effects they bring to play when intersecting with remaining work that is still done manually.

Figure 2. Port of Montreal staging area. Photo by author, data from Statistics Canada (2022)

There are many areas where humans still outperform their digital counterpart. On two distant ends of the hierarchy of the logistics industry, Jen and Jack both spoke to this. For Jen, humans still have many important roles to play and sometimes, under the brutal logic of the market, the marginal gains of automation often do not add up fast enough to justify their implementation. In these situations, the work that would be required to unseat the inertia of manual labour is simply not worth it. In other situations, such as the fuel industry that Jack worked in for decades, the work is simply too dangerous for computers to be given the final say. Automation is often from the bottom upwards, with the most efficient outcome, the cheapest process, the most substantial payoff first. The product of this methodology understandably creates a scenario in which a sense of barely organized chaos reigns, an unacceptable possibility when handling hazardous materials.

A long, long, way from the warehouse, railyard, or dock, is an office. In this office, an agent is likely sitting at a computer with their face buried in a chart, an email inbox, a case log. Despite the historical discourses laid out by a theory of labour which found its initial momentum in theorizing on the factory, it is in an office from whence most of what we can characterize as automation will likely continue to emerge.

Automation has made a factory of the office. Here, computers idle through their programmed patterns. They watch over containers, dispatch trucks,

and guide titanic vessels to safe harbours. Goods circulate, things move, and the churning flow of logistics moves raw and processed materials around a hungry globe. As long as things go as expected, we could imagine a version of this entirely managed by the predictive processes of a digitized supply chain. However, patterns can fail to anticipate or run afoul of each other. Mistakes can be made, bad data can infiltrate a system, or something totally impactful can occur. This is where, as the change wrought by COVID has shown, people remain integral parts of the system. Through the human capacity for adaptability, the automation of processes is made possible.

This examination has been speculative and at times fitful. Many of the conclusions drawn are tentative in nature, drawn from the combined experience of the authors and their interlocutors. We have seen here the potential for automation, which can free workers from mundane or otherwise tedious tasks, giving way to new models of labour. However, the challenges we see here are the same that the earliest libraries experienced in ancient history, the same against which the earliest transportation agents laboured, and the same future generations of individuals examining our time will experience. These are the trans-historical and trans-anthropological challenges of a far-sighted and translatable organization of information, and the archival practice required to ensure effective transition when one system supersedes another. Ensuring that one system of information, such as a bill of lading, whether handwritten or digitized, is inter-intelligible requires systematic cooperation and long-term vision. The challenges of automation represent, in a way, a trap for the drive to innovate. If we argue that innovation drives evolution, then we equally convict it of causing mountains of disparate interlocking processes. Automation is not and does not presently look as though it will have the same revolutionary impact as ISO 668 did in 1968. This is to say, it is not a revolutionary new guideline that was years in the making, classifying and standardizing the measurements and specifications for all approved containers around the globe, thus paving the way for a new wave in global transportation and logistics. Instead, the changing winds of COVID, with commodity shortage, container surplus, along with the currents of capitalist innovation, leave little time or space for the digital stewardship and collaboration required to create a truly "efficient" automated system, where each actor in the web can truly and finally speak to another. As a series of individual implementations, the industry lacks a guidebook for automation and digitization that was developed in ISO 688 for the container. This is purely a logistics perspective and does not answer the human question of

what the consequences are on the individual experience of labour. Automation is profoundly changing the human experience to deal more with computers and less with people.

We encourage others to take up our examination, to explore what more is to come from a logistics industry whose rate of change seems inseparably tied to an obsession to seek out every last marginal profit and efficiency. What is left to anticipate? Ever larger vessels, elephantine in their plodding courses across the world's oceans? Data pools even larger in their virtual footprints, saturated with metrics and information, fed by sensors, waiting for clever managers to write process into code? What new fad or global catastrophe will encourage the next series of changes?

Mathieu Lamontagne-Cumiford
mat.lamontagne@gmail.com

Hannah Lillis
hannah.lillis@gmail.com

Notes

1 As with many inquiries in their early phases, our interlocutors are largely second or third-degree connections. Due to this proximity, we have shifted and adjusted details of their work and identity to help protect confidentiality.

2 Whether we can define this as a "birth" or an "expansion", or indeed an "invasion," is something which requires qualification and, simultaneously, the careful installation of numerous caveats. These include, but are not limited to, a consideration of trade through the medieval, early modern, and European industrial eras, as well as a fair and honest analysis of the commercial disruption wrought by colonialism on the inhabitants of the land we now call Canada. There is no opportunity for that in this paper, and indeed our research focus currently leads us to concentrate on the contemporary questions of automation within the post-millennial, post-truth, post-ism era.

3 Consolidation has been a lifelong trend in the shipping industry. As in Canada, international firms are engaged in a post-COVID blitz of purchases. For example, French industry leader CMA CGM coolly notes that their "diversification into logistics accelerates" as they ink a deal to acquire the equally French Bolloré Logistics. "Poison!" dramatically notes the Loadstar news site (Savvides 2023). Some freight forwarders could be currently described as "thoroughly alarmed," or perhaps "stampeded," as one large liner's tactical diversification is in fact the small freight forwarder's worrisome consolidation. The Bolloré acquisition (this 2023 one with CMA, not to be confused with the 2022 Bolloré Africa one with Swiss MSC!) represents the large players continuing their moves into multiple freight sectors, complete with strong digital

offerings, and now vastly higher rate negotiation power (Broom 2022). Interesting really, as "alarmed" and "stampeded" is exactly how Charles H. Cramp describes the reaction of the British newspapers in 1847 reporting on the advent of the new US subsidized Collins Line (1902). Perhaps the British need not have worried —that line was defunct barely a decade later following two catastrophic vessel losses (Britannica 2023). But, then again, by that time, the Germans were well on their way to breaking the British ascendancy in shipbuilding.

4 It is worth noting here for those unfamiliar that the earliest of Ultra Large Container Ships were of circa 20,000 TEU capacity. Further, with the onset of acute climate change from the early to mid -2020s, the water levels of the St. Lawrence River have remained, and will become, increasingly low for a longer and longer period of time through the year. Ironically, this means that the so-called ULCS (McKinsey predicted a vessel of 50,000 TEU, but where does one even go from "Ultra" in the age of "Posts"?) of even 20,000 are too large to sail directly to the Port of Montreal fully loaded. This is an excellent example of where individual environmental factors (such as water levels and the St. Lawrence Beluga, which are native to the bay and protected by law from fast-moving vessels) are dealt with tangentially to the pressing global question of lock size and port capacity. Even in this apologetic footnote, the phrases "dealt with tangentially" and "pressing global question" seem to have been deployed the wrong way around for a world in a climate emergency. For the interested reader, further reading and interesting discussions can be found in Jungen et al. (2021) and Béland (1996).

5 Was Bitcoin a digital predictor of the physical freight rate? Could it be said the fall of Bitcoin was one of the key indicators earmarking the coming tide of "normalization" of the post-COVID market? Such inquiry would be the subject of an excellent short paper. Both depend on a strong market, a hearty supply of disposable income, and almost iron-clad consumer confidence.

6 Significant scholarship exists relating to labor, industrialization, and automation. For the purposes of this article, we have chosen a limited interaction with this scholarship, as it was not mentioned by our interlocutors.

References

Béland, P. 1996. "The Beluga Whales of the St. Lawrence River." *Scientific American* *274*(5):74–81. https://www.jstor.org/stable/24989528.

Broom, G. 2022 "MSC Group completes acquisition of Bolloré Africa Logistics," *MSC*. https://www.msc.com/en/newsroom/press-releases/2022/december/msc-group-completes-acquisition-of-bollore-africa-logistics (accessed 15 May 2023).

Britannica, T. Editors of Encyclopaedia. 2023. "Edward Knight Collins." *Encyclopedia Britannica*. https://www.britannica.com/biography/Edward-Knight-Collins (accessed 15 May 2023).

Cornwell, A. S. El Safty, A. Lewis, and A. MacSwan. 2022. "Suez Canal expansion due to finish in July 2023." *Reuters*. https://www.reuters.com/business/suez-canal-expansion-due-finish-july-2023-sca-chairman-2022-01-16/ (accessed 9 December 2022).

Cramp, Charles. H. 1902. "The Steamship Merger and American Shipbuilding." *The North American Review* 175(548):5–16. http://www.jstor.org/stable/25119268.

Estevadeordal, A., B. Frantz, and A.M. Taylor. 2003. "The Rise and Fall of World Trade, 1870–1939." *The Quarterly Journal of Economics* 118(2):359–407. https://www.jstor.org/stable/25053910.

Harper, J. 2021. "Suez blockage is holding up $9.6bn of goods a day." *BBC News*. https://www.bbc.co.uk/news/business-56533250 (accessed 9 December 2022).

Hausmann, H., M. Pena-Alcaraz, J. Stoffels, M. Wiest, and T. Wolfel. 2022. "Startup funding in logistics: Focused investment in a growing industry." *McKinsey and Company*. https://www.mckinsey.com/industries/travel-logistics-and-infrastructure/our-insights/startup-funding-in-logistics-focused-investment-in-a-growing-industry (accessed 9 December 2022).

Jungen, H., P. Specht, J. Ovens, and B. Lemper. 2021. "The Rise of Ultra Large Container Vessels: Implications for Seaport Systems and Environmental Considerations." In *Dynamics in Logistics,* edited by Freitag, M., H. Kotzab, N. Megow, 249–275. Cham, Switzerland: Springer. https://doi.org/10.1007/978-3-030-88662-2_12.

Kjærgaard-Winther, C. 2022. "A.P. Moller - Maersk and IBM to discontinue TradeLens, a blockchain-enabled global trade platform." *Maersk*. https://www.maersk.com/news/articles/2022/11/29/maersk-and-ibm-to-discontinue-tradelens (accessed 9 December 2022).

Leivestad, H. H. 2022. "The Shipping Container." *History and Anthropology*, 1–6. https://doi.org/10.1080/02757206.2022.2066094.

Rodrigue, J.P. 2020. "Evolution of Containerships." *Transport Geography*. https://transportgeography.org/contents/chapter5/maritime-transportation/evolution-containerships-classes/ (accessed 9 December 2022).

Safi, M., C. Levett, P. Scrutton, P. Torpey, C. Watson, and P. Guest, P. 2021. "How a container ship blocked the Suez Canal - visual guide." *The Guardian.* https://www.theguardian.com/world/2021/mar/24/how-a-container-ship-blocked-the-suez-canal-visual-guide (accessed 9 December 2022).

Sánchez, R. J., D.E. Perrotti, and A.G. Fort. 2021. "Looking into the future ten years later: big full containerships and their arrival to South American ports." *Journal of Shipping and Trade* 6(1):1–20. https://doi.org/10.1186/s41072-021-00083-5.

Savvides, N. 2023. "€5bn bid for Bolloré Logistics – 'another poison deal' for forwarders," *The Loadstar*. https://theloadstar.com/e5bn-bid-for-bollore-logistics-another-poison-deal-for-forwarders/ (accessed 15 May 2023).

Statistics Canada. 2022. *"Table 12-10-0011-01 International merchandise trade for all countries and by Principal Trading Partners, monthly (x 1,000,000)."* Ottawa: Statistics Canada. https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=1210001101.

Valorzi, J. 2005. "CP Ships goes for $2.4-billion." *The Globe and Mail*. https://www.theglobeandmail.com/report-on-business/cp-ships-goes-for-24-billion/article1122933/ (accessed 9 December 2022).