

Awaiting Automation's Arrival

A Virtue Ethics Analysis

STS Research Paper

Presented to the Faculty of the School of Engineering and Applied Science

University of Virginia

By

Robert S. Prater III

May 5th, 2020

On my honor as a University student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments.

Signed: Robert S. Prater III

Approved: _____ Date May 5, 2020

Benjamin Laugelli, Department of Engineering and Society

Approved: James Lambert Date May 5, 2020

James Lambert, Department of Your Technical Advisor's Department

Chart to Reference Frequent Initialisms

Initialisms	Definition	
VPA	Virginia Port Authority	Dictates the seven ports within the state of Virginia. Public.
ILA	International Longshoremen's Association	Labor union representing longshore workers along the East Coast of the United States and Canada, the Gulf Coast, the Great Lakes, Puerto Rico, and inland waterways.
ILWU	International Longshore and Warehouse Union	Labor union which primarily represents dock workers on the West Coast of the United States, Hawaii, and in British Columbia, Canada
USMX	United States Maritime Alliance	Alliance of container carriers, direct employers, and port associations serving the East and Gulf Coasts of the U.S.
IUMA	ILA-USMX Master Agreement	Renewed 6-year contract between ILA and USMX regulating automation, pay increases, and job security.

Introduction

In September of 2018 the International Longshoremen's Association (ILA), a labor union representing longshore workers along East Coast of North America and East Coast Ports such as the Virginia Port Authority (VPA), redrafted the first six-year extension to their original contract with the United States Marine Alliance (USMX) signed in 2012 now extending the Master Agreement (IUMA) until 2024. The original 2012 Master Agreement regulates automation, pay increases, and job security, and specifies "There shall be no fully-automated terminals developed and no fully-automated equipment used during the term of this Master Contract. The term "fully-automated" is defined as machinery equipment devoid of human interaction" (Master Agreement, 2012). The VPA's motion to join the collective East Coast ports by agreeing to the Master Contract seeded little doubt in their stakeholders and received overwhelming approval from port employees. While on the other hand, the West Coast Union (ILWU), labor union representing the dock workers on the West Coast of North America, formalized a contract fully authorizing the development of fully autonomous operations in their ports and received extreme negative backlash from the community. The East Coast Union (ILA) then drafted the original 2012 Master Agreement to restrict fully autonomous ports on the East Coast. In discussing the differences between the East and West Coast Unions stances on automation, scholars have brought attention to the West Coast Union's (ILWU) protest on expansion of autonomous terminals. These actions reinforced the strength of the East Coast Union Master Agreement (IUMA), and ratification, that has protected its members from automation since 2012. However, there is not much discussion on the ethical implications of the East Coast Master Agreement's policy on automation among maritime operation scholars.

When ports and unions implement moral judgment regarding autonomous policy their employees have faith in them; however, when they fail to regard ethics and their employee's ability to make conscious decisions, we fail to gain insight into ethical standards of ports' ecosystems. By taking an ethical perspective, it allows for an in-depth analysis of the Master Agreement (IUMA). I argue the Master Agreement's policy on restricting automation within its ports is moral because it embodies attributes of temperance, justice, and courage which are cardinal virtues of virtue ethics.

Literature Review

Despite the lack of research or documentation into ethical issues within the maritime industry, with detailed understanding of virtue ethics, I will break down the East Coast Master Agreement (IUMA) policy on automation and the Port of Virginia's associated actions to deem their morality. In my research I unearthed articles from scholars such as Kristen Decas, Aravind Kailas, and Katherine C. Kellogg. These articles are quite contrasting in that one discusses the inevitable implementation of "digitized" technology within the port and shipping sector while on the other hand Kellogg talks about a "ethnographic study" of hospitals and power relationships with oncoming technological advancement. These two articles complement one another well with respect to my research topic. Decas and Kailas reinforce the quickly approaching wave of automation and how the ports of America should handle it. Kellogg discusses the importance of manager-employee relationships and the ethics of higher-level technology. These two articles will offer deeper insight into my analysis of the Master Agreement (IUMA) and an evaluation of virtuous actions by the Virginia Port Authority (VPA).

In *Empowering the New Mobility Workforce, Part I*, Decas and Kailas's write Chapter Four: *Strategies to Prepare Future Port and Intermodal Workers for Transformational Technologies* Decas and Kailas discuss the paramount importance of connectivity in the development of future technologies—they call this “digitization.” It is the main driver behind the evolution of traditional supply chains muddled operations into an elegant, smart, and efficient supply chain ecosystem. Today, supply chain in the ports generally consist of a “concatenation of many siloed processes and systems with minimal transparency and agility to maximize customer productivity,” Decas and Kailas believe. Whereas the “digital” supply chain would break down these siloes and increase the transparency behind port operations (Decas & Kailas, 2020). I can confirm this observation that port transparency is minimal with my recent consultation with the Port of Virginia. Decas and Kailas digress and discuss “digitization” transforming freight movement into the port by “integrating trucks into the digital logistics chain.” This implementation of the trucking silo into the port silo is a monumental first step into developing an effective connective port. While they admit complete digitization of the freight and port sector is far away in time, but the ideas behind it are very much a reality. “Innovation will happen. However, how it is applied and how it affects our society is up to us” (Decas & Kailas, 2020). This quote hits the meaning of this research paper. Focusing on the societal and application effects are vital in the successful integration of automation into the port industry.

While Kellogg's article is much different in application than my argument, *Subordinate Activation Tactics: Semi-professionals and Micro-level Institutional Change in Professional Organizations* delves into the meaning of small changes in larger organizations and their impacts on workers such as the East Coast Union (ILA) members. She begins by explaining the immense pressure placed on professional organizations as of recent with the evolution of globalization,

digitization, and connectivity. This article stresses taking subordinates for granted typically resulting in worse boss-employee relations and a further degradation of operations at hospitals. Whereas when subordinates are empowered and feel their contributions are meaningful, operations efficiency increases (Kellogg, 2018). This implies parallels can be drawn within port operations. Here it is easy to see the VPA understands their employees' ability to make their own decisions. This elaboration from Kellogg insists that increased responsibility and support deems a more successful operation.

These two articles are quite different yet align closely with my argument. I believe the Master Agreement's (IUMA) policy on automation is moral with respect to virtue ethics. Nonetheless their articles clearly explain where their personal sentiments lay. With this, I will discuss the moral actions and ethical dilemmas construed within the Master Agreement and through these findings will advance understanding of longshoremen unions and the staggering impact of automation within the maritime industry. Nonetheless, Decas and Kailas fervently believe automation will be the way of the future, and inevitably absorb most supply chain operations (Decas & Kailas, 2020).

Conceptual Framework

My analysis of automation at the Port of Virginia and the Master Agreement's policy draws on Aristotle's theory of virtue ethics. Virtue ethics is an ethical theory focusing on the nature of the acting person. This theory indicates what characteristics people must develop or have to be deemed moral. According to Aristotle, moral virtues are not given at birth nor supernatural, but can be developed by deeds—in other words it can be practiced just like all arts.

A famous quote from Aristotle reads, “For the things we have to learn before we can do them, we learn by doing them, for example, men become builders by building and lyre players by playing the lyre; so we too become just by doing just acts, temperate by doing temperate acts, brave by doing brave acts.” Another vital part to become a virtuous agent is harboring the ability to discern virtue to practice in each situation (van de Poel & Royakkers, 2011). According to virtue ethics a virtue is the mean between two extremes. For example, courage is the mean between cowardice and recklessness. Virtue ethicists since Aristotle have identified a series of core required virtues called the “cardinal virtues:” they are as follows: Prudence, Justice, Courage, and Temperance. These are called cardinal virtues because they are the ones upon which all others depend.

According to virtue ethics prudence is an overarching cardinal virtue – prudence is the ability to discern and use practical wisdom. Beside being listed first, prudence grants the person the ability to find the “mean” between extremes amongst the other three cardinal virtues. As such prudence functions as the fundamental virtue which undergirds the other three. My analysis therefore will focus on the three cardinal virtues that build on prudence, namely, temperance, courage, and justice.

Temperance is the capacity to exercise self-control, restraint, and moderation. For example, St. Thomas Aquinas argued that people should exercise temperance or restraint when it comes to food, drink, and sex (Richert, 2019). Temperance, then, is the mean between excess and frugality. The cardinal virtue of courage requires practicing fortitude and endurance under duress. As such, courage is the mean between the extremes of cowardice and recklessness. Accordingly, acting “courageously” allows people “to overcome fear and remain steady in our will in the face of obstacles” (Richert, 2019). Justice refers to the practice of fairness and equity.

It represents the middle position between favoritism and biased discrimination. According to Saint Thomas, justice is giving each person his or her due. A helpful way to think about justice is our common colloquialism, “justice is blind.” This phrase implies that justice neither favors nor discriminates unfairly. (Richert, 2019).

Analysis of Evidence

In the Fall of 2018 the ILA, largest union of maritime workers in North America, and the United States Maritime Alliance (USMX)—represents employers of the East and Gulf Coast longshore industry specifically handling cargo—extended their original six-year agreement namely Article XI regarding automation. The contract is subject to ratification by East Coast Union (ILA) members from each port. Article XI is titled “New Technology Implementation and Workforce Protection” Section 1(b): “There shall be no fully-automated terminals developed and no fully-automated equipment used during the term of this Master Contract. The term ‘fully automated’ is defined as machinery/equipment completely devoid of human interaction (Master Contract, 2018).” While the details of the Master Agreement were not made public, this public statement from the East Coast Union’s International President, Daggett, holistically encompasses the benefits and positive implications of the IUMA.

ILA members covered under this ILA-USMX Master Agreement can now look to a bright future where their salaries will increase and the threat of job loss from fully automated terminals, semi-automated terminals and automated equipment is eliminated...[Longshoremen] put in long, oft-times grueling hours to bring home a

contract that I think represents the best collective bargaining agreement in ILA history and maybe even in the entire history of Organized Labor (Berman, 2018).

This deal has only increased discontent among longshoremen on the West Coast. Comparing and relating these two situations will expand upon the ethical distinction between the two.

The East Coast Union (ILA) made notably sufficient decisions and actions with respect to three of the key cardinal virtues for morally responsible engineers: temperance, the restraint of our desires or passions; courage, the strength to act morally; and justice, right reason applied to practice. The following paragraphs go through each of the cardinal virtues and detail the written statements and structure of the ratified 2018 Master Contract (IUMA) to show the morality behind this document and related parties.

Temperance

When understanding how the East Coast Union acted with temperance is through their restraint for their own good. The public ports do not run on much of a profit (e.g., VPA), while a lot of revenue, the port is inclined to spend as they are supported mainly by the government's grants. If the port instead chose to implement fully autonomous operations, they be able to increase their expenditures and eventually reap the monetary benefits from this. However, this is not the case. The Master Agreement (IUMA) continues to ban automation thus respecting their employees, showing restraint, and therefore acting with temperance. Furthermore, in Article XI, Section 3(b), *Workforce Protection Guidelines*, "In order to protect workforce, there must be a determination of the number of positions affected, rate of pay, and similar Master Contract hours in remaining or new Master Contract positions." (Master Agreement, 2018) Here it is written there is clear protection of employees and when changes happen it must be drawn out and

deemed fair. The depth in which the contract goes into fairness for both employees and management is only more emphasis on the morality within this document.

Courage / Fortitude

The third cardinal virtue is fortitude or commonly called courage. The East Coast Union (ILA) showed courage by resisting the lucrative and helpful additional benefactors in favor of full automation. They face a hard decision here to show temperance by showing restraint, and fortitude by disregarding the strong-willed stockholders and executives in favor of automation. The creation and ratification of the Master Agreement's stance on automation is courageous. Withholding emerging technology from money hungry ports to ensure the peoples' job security embodies courage. Elaborating on the fortitude of the East Coast Union ratifying the 2012 Master Agreement into even more detail and restrictions on fully autonomous operations. They added checks and balances along with a string of strict guidelines. Article XI Section 3(a) (i-v) *Workforce Protection Guidelines* lists five guidelines to be followed for instituting workforce protections, "(1)define the types of technology and the effects on capacity and efficiency; (2) determine the manning for the new equipment; (3) identify the new work created by technology; (4) determine the possibility of reassignment within craft subject to approval by the New Technology Committee; (5) and provide necessary training." Here the East Coast Union (ILA) ensures there is a strict and followable policy on implementation of new technology even if it is not "fully-autonomous." Here the ILA is acting with immense courage and fortitude to ensure these benefits.

Justice

The 2018 continuation of the Master Agreement is not when the East Coast Union (ILA) began reflecting Aristotle's virtue ethics regarding autonomous policy but rather six years prior in 2012 when they originally drafted the document. This policy must not be confused with legal justice, because our legal rights can never outweigh natural ones. This preemptive decision by the East Coast Union to protect their employees from even the possibility of job loss is an impressive example of justice. The East Coast Union (ILA) showed not only a single instance of just acts, but rather multiple actions over a decade resisting autonomous efforts giving value to their "subordinates," as Kellogg would describe the situation. Looking directly at the Master Agreement ratification in 2018 under Article XI "New Technology Implementation and Workforce Protection," Section 2, *New Technology Committee*, they have added seven members from both USMX management and ILA to ensure each vote on new technology (or other reasons for voting elaborated in Master Agreement). This committee is the definition of legal justice and extends the sway the East Coast Union (ILA) holds for the next six years. (Master Agreement, 2018)

I have argued that the East Coast (ILA) and United States Maritime Association (USMX) Master Agreement's (IUMA) policy on automation is virtuous given respect to Aristotle's virtue ethics theory, and furthermore aligning with the "cardinal virtues" within the writing of the document. On the other hand, some may think the Master Agreement (IUMA) is rather unethical due to the failure to advance our ports to their fullest possible extent. Others could draw on utilitarian ethics to point out the East Coast Union (ILA) could have ratified the document to harness more control over autonomous machinery at ports including semi-automation and specifically algorithms behind them. Utilitarian ethical theory decides a good or bad choice by

which of the two will produce the greatest good for the greatest number (University of Texas, 2020). A reading of the Master Agreement (IUMA) may read more like:

“There shall be no fully-automated terminals developed and no fully-automated equipment used during the term of this Mater Contract. The term ‘fully automated’ is defined as machinery/equipment completely devoid of human interaction. However, semi-automated terminals may be proposed to the New Technology Committee according to the *New Technology Implementation Procedure*

In this case, one may think that implementing automation would in fact do less good for the greater population because of the sheer job loss; however, this is not the case. In a study by McKinsey & Co. also discussed in my prospectus, they report in three port cases, semi-automated and fully autonomous ports have an insignificant difference in number of employees replaced by machinery (Knowler, 2018). The East Coast Union (ILA) deciding to continue the automation ban for six more years likely resulted in significantly less good for the general public. This is primarily because the installment of autonomous machinery would bring in a sizable gift from the government along with more tech savvy jobs replace the longshoremen. While this utilitarian perspective likely would not sit well with East or even the West Coast Union (who has allowed fully autonomous operations). Despite the matter of fact reasoning behind utilitarian consequentialism, I do believe it would have in the long run benefitted more people but fails to consider the longshoremen or their ability to have an opinion.

Conclusion

The East Coast Union (ILA) ratification of the Master Agreement (IUMA) reads in alignment with Aristotle's virtue ethics. While the oncoming fear of automation is imminent the, VPA, ILA, and USMX made courageous decisions with justice and temperance. From gaining understanding from Kellogg that subordinates must be valued and feel so and the significance of automation from Decas and Kailas, the forthright virtuous actions taken by the East Coast Union (ILA) would be applauded by Aristotle. This research has furthered understanding of policy withing the East Coast Master Agreement (IUMA) so that readers may understand maritime operations and policy. This will further knowledge of virtuous policy within maritime law. We understand one must understand the people who are affected by law, and provide these people with ethical respect regarding temperance, courage, and justice. The sheer number of people affected by this agreement are in the millions. The possibility of 1% of those jobs being taken—especially during this global pandemic—is unthinkable. All in all, the 2018 Master Agreement has secured many jobs and the happiness of families across the state of Virginia, but this goes notwithstanding the looming presence of automation. Through gathering further understanding of the port, their subordinates, and working with the unions, the ports of America will not fail to see a day of seamless digitization and connectivity.

References

- ILA - USMX reach 6-year contract agreement covering US East and Gulf Coast ports. (2018, September 7). Retrieved from <http://www.iliworldwide.com/NewsArticle.aspx?id=1619>
- Berman, J. (2018, September 12). ILA-USMX come to terms on a new six-year master contract extension. Retrieved March 1, 2020, from https://www.logisticsmgmt.com/article/ila_usmx_come_to_terms_on_a_new_six_year_master_contract_extension
- Bonney, J. (2017, December 6). ILA-USMX contract talks break off over automation. Retrieved from https://www.joc.com/port-news/longshoreman-labor/international-longshoremens-association/ila-usmx-hit-snap-over-issue-automation_20171206.html
- Decas, K., & Kailas, A. (n.d.). Strategies to Prepare Future Port and Intermodal Workers for Transformational Technologies . In *Empowering the New Mobility Workforce* (pp. 79–81). Amsterdam: Elsevier. doi: 2/29/2020
- Kellogg, K. C. (2018). Subordinate Activation Tactics: Semi-professionals and Micro-level Institutional Change in Professional Organizations. *Administrative Science Quarterly*, 64(4), 928–975. doi: 10.1177/0001839218804527
- Knowler, G. (2018, December 13). Costs found to outweigh port automation benefits. Retrieved from https://www.joc.com/technology/costs-found-outweigh-port-automation-benefits_20181213.html.

Richert, S. P. (2019, January 3). What Are the 4 Cardinal Virtues and What Do They Mean?

Retrieved from <https://www.learnreligions.com/the-cardinal-virtues-542142>

Roosevelt, M. (2019, November 7). As L.A. ports automate, some workers are cheering on the robots. Retrieved from <https://www.latimes.com/business/story/2019-11-07/port-automation-dockworkers-vs-truckers>

University of Texas. (2020). Utilitarianism. Retrieved from <https://ethicsunwrapped.utexas.edu/glossary/utilitarianism>

van de Poel, I., & Royakkers, L. (2011). Normative Ethics . In *Ethics, Technology, and Engineering An Introduction*. Malden, MA: Blackwell.

Vineyard, J. (2018, August 16). New ILA Master Contract Details & Approval Expectations. Retrieved from <https://www.universalcargo.com/new-ila-master-contract-details-approval-expectations/>

USMX-ILA Master Contract Book. (2018). Retrieved from https://www.usmx.com/assets/content/public-resources/2018-2024_USMX-ILA_MASTER_CONTRACT_BOOK.pdf

USMX-ILA Master Contract Book. (2012). Retrieved from https://ilaunion.org/wp-content/uploads/2016-MasterContractPrinting-1.8.final_2.pdf