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### “The Effects of Artificial Intelligence”

The effects of artificial intelligence’s (AI) rising prevalence throughout society, particularly the workforce, is a topic that deserves more research as it affects both present and future generations. Fears that smart technology will deteriorate the job market have existed since the 19<sup>th</sup> century when Luddites rebelled against the Industrial Revolution. Research has shown that advancements in technology irrefutably increased productivity, but comes with a paradoxically shrinking availability of jobs. This study will discuss and interpret various research articles about the advancements of artificial intelligence and the effects it has on society.

Researchers have long debated the technical capabilities of artificial intelligence. Ted Goertzel, a professor at Rutgers University, defines two types of artificial intelligence. The first type is known as “applied-AI”. Applied-AI refers to software designed to solve a certain problem or perform a particular task (Goertzel 343). Today, applied-AI is commonplace in society and maturing quickly. For instance, applied-AI is used in the software behind automation robots in factories, accounting programs, and self-driving cars. However, Ernest Davis and Gary Marcus

in “Commonsense Reasoning and Commonsense Knowledge in Artificial Intelligence” argue that applied-AI still has a long way to go, dismissing the notion of robotic automation technology advancing to fulfill every day needs. They detail an example of a robot waiter responding to a request for a drinking glass, but returning a damaged or dirty glass to the client. Avoiding these mistakes presents a very difficult challenge for artificial intelligence. (Davis, Marcus 94). This is due to the singular nature of applied-AI. However, the second type of AI would remedy these problems. It is called “general-AI”. General-AI is defined as intelligence rivaling general human intelligence (Goertzel 343). Many authors agree that general-AI is a very far away goal due to the complexity of the human mind. Marcus and Davis general-AI’s weaknesses into categories such as computer vision, robotic manipulation, automated commonsense, as well as proper emulation of taxonomic reasoning and temporal reasoning. These are areas of general intelligence where they state advancements will be difficult. “We doubt any silver bullet will easily solve all the problems of common sense reasoning,” says Marcus and Davis (102). Goertzel agrees, stating that he believes general-AI will come in the form of an interface of many narrow-AIs working together, much like Apple’s Siri (352).

As artificial intelligence becomes more capable and complex, researchers debate its effects on employment. The term “technological employment” refers to the unprecedented “employment” of technology. This shift is beneficial for employers, as they have access to employees free of mortality (Frey 40). Andrew McAfee and Erik Brynjolfsson, a professor at MIT believe that robotic automation in particular has diminished employment in certain fields, and that unemployment will

only be exacerbated (Rotman 31). Since 2000, productivity in the workforce has grown while employment has stagnated. This anomaly is occurring for the first time in recorded human history (Rotman 29). Thomas Frey published a list of “101 Endangered Jobs by 2030”, in agreement with their sentiment. The list was based around technology driving jobs to extinction, and included jobs such as financial planners, drivers, and doctors (42). Goertzel, however, refutes a handful of these claims, championing the necessity of humans in a post-AI world. While AI handles current computer-based trading, the safety parameters are set by human analysts to prevent catastrophic damages (345). Doctors have found it difficult to integrate technology into their routine care, citing it as more timely to diagnose the patient normally than to input the data and be returned false diagnosis warnings (Goertzel 350). As a result of these technologies, some researchers hope that new jobs requiring skill sets different than those easily replaced by machines will be created (Rotman 32). Campa cites the essay “The Age of Robots” written by Hans Moravec, explaining that Moravec believes the future purpose of humanity will be to entertain other humans through games, sports, and artistic works (Campa 90). Moravec’s prediction correctly aligns with Rotman’s observation that modern employers are creating new jobs in search of creative people (31).

Researchers also examined the changes taking place in social classes due to the introduction of applied-AI in the workforce. Rotman presents data arguing that the middle class has suffered the most in job opportunities and wages due to technological advancement. Jobs with a skill level of 20% to 50% saw a negative growth in share of employment and wages (Rotman 33). McAfee believes the divide

between the top and lower classes will grow as the middle class is eviscerated from society. Goertzel, Rotman, and Campa all agree that the ruling class in particular drives technological advancement. Goertzel recalls two stories of artificial intelligence initiatives to run the Soviet Union and Chile governments. Both were ambitious projects but met untimely demises due to political intervention (Goertzel 346). Campa argues that the agendas of the ruling class have the power to propel forward advancements in technology (Campa 89). He makes multiple predictions about a distant future with general-AI replacing the work force, and the consequences this shift has on society. All of the scenarios come to a similar conclusion, that there is a necessity for political policies which ensure humanity receives compensation from companies' grosses, mandated shortened work hours, or a living salary based on taxation (Campa 97).

Artificial intelligence is an exciting field of research, which will undeniably change how humans live. The various authors discussing and predicting the future of the technology all use the current workforce and job market as a frame of reference in their predictions, but I can't help but wonder what successive generations will accomplish? Already, the shifts in society toward a more creative and individual person have taken place due to the availability of information. Will future generations inherently be better suited for a modern workforce, or more inclined to study a science, technology, engineering, or math major in secondary education? Only time will tell how the future of artificial intelligence plays out.

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