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CURMUDGEON CORNER



Effects of generative AI on service occupations with social interaction

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Predicting employment effects of new technologies has always been difficult. Discussing slavery, Aristotle (Politics 1253b35) misjudged effects of automation, claiming that occupations such as musician (since plectra would strike lyres by themselves) and waiter (referring to Hephaestus' handmaidens being robots on wheels) could be replaced by automata. He correctly predicted the effect of self-weaving shuttles, considering today's textile industry. Despite just having defined man as a social animal (Politics 1253a2), Aristotle neglected to see how demand for social interaction could protect the occupations of musician and waiter. The world of ancient Athens is not ours; despite Aristotle's views on the subjection of women and the enslaved, today felt as morally repugnant, his faulty predictions do raise an important question relating to social interaction.

Until the recent concern with effects of generative AI and Large Language Models (LLM), mainstream predictions of how AI might affect service occupations have not taken social interaction seriously. When interpreting AI as robotics and machine learning, social interaction would not be in focus, although researchers did acknowledge that pairwise, face-to-face interactions might not be easily replaced by AI.

Studies in the early 2000s of changes in the international spatial division of service labour, due to advances in digital information and communication technologies, distinguished between personal and impersonal services. Occupations with no face-to-face servicing requirement, as well as with low social networking requirement, were identified as unlikely to be offshored by being transmitted digitally across borders, and the personal/impersonal dimension of services was found to be more influential on offshoring than the routine/ non-routine dimension.

Revisiting the field of AI and more precisely generative AI with LLMs, Frey and Osborne (2023) have modified their

Jan Bröchner jan.brochner@chalmers.se much-cited 2017 forecast of the effects of computerization, interpreted as machine learning and mobile robotics, at that time claiming that almost half of all US jobs were at risk. They now recognize that in-person interactions cannot be readily substituted for: "the art of performing in-person will be a particularly valuable skill across a host of managerial, professional and customer-facing operations". As almost all researchers in this field, their fundamental source of data on occupations has been the US Department of Labor O*NET database. Recent analyses of potential AI effects have often taken 'abilities' linked to occupations in O*NET as their starting point, but 'abilities' concerns the individual in isolation rather than in a social context. Deranty and Corbin (2024) have identified several weaknesses with current approaches to using O*NET. Anyway, there are the two aspects of 'work context' and 'physical work conditions' in O*NET that allow identifying service occupations characterized by social interaction. As an example of occupations more insulated from both automation and augmentation due to generative AI, Autor et al. (2024) mention "clergy and religious workers", although this was a premature guess since theologians have already made a case for augmentation as when AI helps preparing sermons. Furthermore, these authors mention the effects of shifts in service demand noting that demographic demand shifts can help account for the emergence of new job titles.

Simple and routinized pairwise social interaction is not always protected. Since 2015, fast food outlets increasingly rely on self-service kiosks instead of frontline employees taking customer orders, replacing an unmediated dialogue between customer and employee. Here AI may take a further step, supporting employees when there are difficult customers to be dealt with in face-to-face dialogue. For tasks where social interaction is not just a matter of dialogue, non-verbal behaviour, voices and intonations, facial expressions, postural shifts, and gestures may prove to be less easily replaced by generative AI. Serving restaurant meals and haircare should belong here. On the other hand, professional occupations where a main output is documents, such as the legal profession and architects, should be transformed by

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generative AI, whether this means creation of new tasks or a strengthened trend towards decomposition. This is what had already been set in motion by digital offshoring of business processes, as when routine legal and engineering tasks were outsourced to India beginning in the 1980s. Currently, advances in AI may contribute to such services being reshored, a movement that could be reinforced by cloud computing.

Arts and sports occupations correspond to demand for services with a sizeable social element. Aristotle recognized interaction between audience and professional musicians but was unhappy with it; the musicians tended to be influenced by vulgar spectators, and this could harm the ethical development of the young (Politics 1341b15-16). Today, and probably also in ancient Athens, social interaction with event participants has been found to be a strong motivational factor for attendance at live arts performances. There is interaction between performers in an orchestra and interaction with the audience, in addition to interaction within the audience. When participants are interviewed, however, they tend to downplay the element of social experience in attending a live concert. Nevertheless, social experience has been found to be a significant predictor of enjoyment, although social experience might not predict audience emotion. Social bonding is also associated with attending associated events such as pre-concert talks. Studies of motivational factors for festival attendance have found that the major factors for attendance were socialization, excitement, escape, learning, and shopping.

Generative AI can give rise to new ideas and inspire creative professionals. In principle, future employment in occupations such as musician or actor could be threatened by costs rising relative to the general level of inflation, owing to Baumol's cost disease: increasing productivity in manufacturing translates into steadily rising costs for the performing arts. Demand from audiences enjoying live interaction have led to soaring ticket prices. The combination of low price elasticity with high income elasticity contributes to increased demand.

Higher demand for authenticity and live experiences could emerge due to pervasive use of virtual media and generative AI in society. It is only too easy to interpret the current success of the Taylor Swift 2024 world tour as a reaction to mediated and recorded music, were it not for Jenny Lind's wildly successful 1850–52 American tour. Her appearances did not constitute a 'live alternative' given that there was no technology for recording music at the time. Many demand factors contribute to participation at major events, probably including Durkheim's phenomenon of collective effervescence in rituals, a Veblen effect where participants buy higher priced tickets in the belief that high prices signal high quality, and being seen as enjoying prestige services.

Comparisons of live and livestreamed concerts have underlined that one of the defining features of concerts is their social nature, although, to some extent, social interaction can be transmitted with livestreaming. When studying cinema audiences enjoying 'Live from the Met', as introduced in 2006-07, it was found that at least for comic operas, the cinema audience could hear the Met audience laughing and laugh with them remotely as well as collectively with other members of the cinema audience. The rise and fall of prerecorded laughter accompanying TV sitcoms, beginning in the 1950s, indicates the limited value of mediated expressions of emotions. Laughter from a live studio audience has also largely gone out of fashion. COVID-19 restrictions provided opportunities for several empirical studies of participant/audience comparisons of mediated and live performance. Seeing a mosaic of musicians on Zoom, with musicians playing together in real time, was more interesting than satisfying as an experience.

There is a need for more research highlighting various types of social interaction that reduce the influence of generative AI on the structure of employment in the service sector. The sociology of music offers clues to the robustness of live performances in the face of advanced AI. Moreover, such studies may create ideas for enhancing experiences with more sophisticated applications of generative AI.

Curmudgeon Corner Curmudgeon Corner is a short opinionated column on trends in technology, arts, science and society, commenting on issues of concern to the research community and wider society. Whilst the drive for super-human intelligence promotes potential benefits to wider society, it also raises deep concerns of existential risk, thereby highlighting the need for an ongoing conversation between technology and society. At the core of Curmudgeon concern is the question: What is it to be human in the age of the AI machine? -Editor.

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