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Conversational Learning in the Age of ChatGPT

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Abstract

Conversation of a particular sort holds the key to learning. I argue here that peer to peer conversation promotes two features that are essential to progressive learning, namely ‘contestation’ and ‘communication.’ Traditional learning is principally concerned with whether students have reached a standard of knowledge and skill prescribed by some authority whereas progressive learning values less predictable outcomes and interests itself on process rather than end product. Machine-based learning such as ChatGPT, if not skilfully used, hides the flexibility essential to progressive learning and entices learners away from vagueness where much creativity begins. Even if ChatGPT presents itself as ‘conversational’, I argue here that this ‘conversation’ is contrived as a medium that lacks these two key ingredients. The knowledge stance presented in ChatGPT can easily obscure the fragility of human learning. Educators need to wonder about this situation. My argument follows the paths of Dewey and Mead and uses Latour and Habermas to sketch out these two important elements that feature typically in collaborative learning. This article concludes by following Dignum to note a real need for computer engineers to have an educational grounding in the arts and humanities. Indeed, the separation of the Arts from Science in Higher Education can no longer be justified in the age of AI.

Keywords: ChatGPT, conversation, collaborative learning, Dewey, Latour, Habermas

Introduction

Granted that ChatGPT is a software application designed to engage in human-like conversation, the term ‘conversation’ in the literature needs to be challenged. As a large language model (LLM), ChatGPT forms sentences on the probability of one word following another but in no way ‘understands’ the expressions produced.¹ Chomsky has suggested that AI and machine learning (ML) ‘will degrade our science and debase our ethics by incorporating into our technology a fundamentally flawed conception of language and knowledge.’² But how could this be so? Surely, we are witnessing a new age of knowledge and learning. The current contribution of ‘big data’ to medical research promotes more

¹ N. Bostrom, *Superintelligence. Paths, Dangers, Strategies. Reprint with Corrections* (Oxford: Oxford University Press, 2017), 86.

² Noam Chomsky, Ian Roberts, and Jeffrey Watumull, “Noam Chomsky: The False Promise of ChatGPT,” *The New York Times*, March 8, 2023, <https://www.nytimes.com/2023/03/08/opinion/noam-chomsky-chatgpt-ai.html>.

accurate diagnoses, promises speedier drug design, makes production methods more efficient, eliminates waste, and allows greater possibilities in the research of scientists in Physics and Chemistry etc. Surely these advances support a more optimistic view of AI? The industrial age has improved systems of production and improved mechanization and automation. AI is simply a continuation of this Enlightenment project. So why should we take Chomsky's warning seriously that the adoption of these technologies in the classroom may be seriously flawed, that AI-classrooms, for instance, may have profoundly negative effects on learners. Does AI hinder learning despite evidence that it can offer more bespoke patterns of learning to those with sensory needs (hearing and eyesight being obvious examples).³ It is important therefore to ask how AI could hinder rather than help the process of learning.

Currently, ChatGPT seems to be in the front line as a widespread technology, serving as a technological support for term papers and piecemeal quizzes, ironically presenting a view of knowledge as fixed and final rather than fresh and fragile. Learners have traditionally needed to be challenged in their understanding of events, and it is often tempting if they can present a polished product and claim it as their own. This is particularly the case if students, for whatever reason, use the technology to catch up with others in their class group and hide their own lack of self-confidence. In those cases, Chat simply deepens the disability. Of course, honesty can be asked for and even demanded in high school papers and beyond, but human nature being what it is... Jenay's survey, for instance, found that most institutional leaders in the US approach AI with a mix of caution and optimism. Optimism because it represents the way of the future, but caution because most respondents to this Landscape Study (72%) worried about its impact on academic integrity.⁴ Similarly, AI currently receives a mixed welcome from teachers.⁵ The view is generally accepted that AI can enable greater flexibility in teaching approaches to 'clued-in' teachers so that they can provide personalised guidance to students.⁶ The devil is in the detail. And while many reports note the benefits of computer-aided learning to provide bespoke feedback to students at any hour of the day or night, Popenici and Kerr, who note this particular benefit at a Deakin University programme referring to it as one of the clear advantages of using AI, despite the cost of servicing a supercomputer to do so, also add a note of caution:

Despite rapid advancements in AI, the idea that we can solely rely on technology is a dangerous path, and it is important to maintain focus on the idea that humans should

³ Jia Zhang and Zhuo Zhang, "AI in Teacher Education: Unlocking New Dimensions in Teaching Support, Inclusive Learning, and Digital Literacy," *Journal of Computer Assisted Learning* 40 (2024): 1871, <https://doi.org/10.1111/jcal.12988>.

⁴ Robert Jenay, "2024 EDUCAUSE AI Landscape Study," Research Report (Boulder, February 2024), <https://www.educause.edu/ecar/research-publications/2024/2024-educause-ai-landscape-study/introduction-and-key-findings>.

⁵ Kevin Bushweller, "Where Does AI Belong in Education? Teachers and Administrators Have Some Strong Opinions.," *Education Week* 43, no. 21 (March 20, 2024): 4–5.

⁶ Zhang and Zhang, "AI in Teacher Education: Unlocking New Dimensions in Teaching Support, Inclusive Learning, and Digital Literacy," 1895.

identify problems, critique, identify risks, and ask important questions that can start from issues such as privacy, power-structures, and control to the requirement of nurturing creativity and leaving an open door to serendipity and unexpected paths in teaching and learning.⁷

Of course, no one is claiming that ChatGPT can replace the teacher. The point is that the presence of Chatbots in the educational environment makes good teaching more imperative. The point at issue is how ChatGPT might be used without compromising the character of progressive learning and without effectively concealing self-confidence issues in the learner or even comprehension difficulties which can become completely hidden behind instantly generated text. It is not the business of ChatGPT to acknowledge the fragility of human learning, even if it is happy to admit to lacunae in its own training. It is flexible enough to discard its own product on request and can mimic being one interlocutor in a more extensive conversation with the individual learner. It often opts to hallucinate and invent facts rather than hesitate! Moreover, quite complex responses flow out from ChatGPT at intervals of seconds, not reflecting the normal hesitancy and perplexity of a learning mind where unpolished and fractured product is often the norm. Talking with ChatGPT is like talking with my uncle Pete whose views never change and are freely given on a 'take it or leave it' basis. If teachers adopt this dogmatic attitude, I doubt they can be successful as teachers. ChatGPT is not really cast in a 'listening' mode and is fixed by its training into something more resembling an 'Uncle Pete' mode. The 'data set' on which the version of Chat has been 'trained' and the possibility that it might 'hallucinate' a fact or two derives from the static posture built into its codes where it is cast as an official expert on everything.

Others will want to argue that my position is too extreme, that ChatGPT is more flexible than I describe and can both prompt and respond to learners, even initiating lines of conversation. After all, ChatGPT presents an interface allowing the learner to respond to the programme. Similarly, studies show that when a programme uses pronouns like 'we' or 'you' it attracts more attention and that this interest increases further if the programme is programmed to initiate the conversation.⁸

This article, however, wishes to contrast the fragility of human learning as defined by situations of creative conversation and what appears to be the more robust but dead character of ChatGPT knowledge. I fear that learners, over-impressed by AI tools, may not be encouraged to generate a living response to situations and problems, but are more likely to react uncritically to the alter-teacher, either accepting the material presented as carrying scientific authority or dismissing it as highbrow or even wrong.⁹ The polished sentences of

⁷ Stefan A.D. Popenici and Sharon Kerr, "Exploring the Impact of Artificial Intelligence on Teaching and Learning in Higher Education," *Research and Practice in Technology Enhanced Learning* 12, no. 22 (2017): 3, <https://doi.org/10.1186/s41039-017-0062-8>.

⁸ Robert F. Siegle et al., "Twenty-Five Years of Learning with Pedagogical Agents: History, Barriers, and Opportunities.," *TechTrends: Linking Research & Practice to Improve Learning* 67, no. 5 (September 2023): 856 with reference to Graesser et al 2017.

⁹ See Bill Ferster, *Teaching Machines: Learning from the Intersection of Education and Technology* (Baltimore, Ma: John Hopkins University Press, 2014).

ChatGPT are alluring to beginners, but many educators fear that they can easily sideline struggles to understand the poem, the equation, the work of art etc. Lured by surface polish and sidetracked by distractions, computer applications easily dissuade learners from valuing the process of questioning what they learn. While experts recognize that the answers given by ChatGPT are superficial, learners have insufficient experience or knowledge to make such judgments. Under pressure to deliver a project by a deadline, learners easily postpone giving time to thinking about something in favour of accepting the account handed to them on a plate.

The claim that true learning is guided by social contact with other human beings is hardly revolutionary and yet it is a claim that seems to need renewed justification in the age of AI. This may be because issues of education are moral issues in any society and, as Dignum says, it is not the technology itself that is or is not ethical, but rather the systems and human organisation built around them. It is these that must explain how they are ethical. These explanations cannot be left to engineers.¹⁰

Humanistic educators know that young children need to learn everything and apart from a few natural reflexes in the first days or weeks (which soon disappear), they need to learn how to eat, stand, walk and above all talk. Their flexibility with language seems to be the key to subsequent advances. Indeed, it is a particular way of negotiating words that enables children to learn from others. Others, including parents and playmates, introduce them to an array of human meanings, not only theoretical meanings, but also practical meanings like how to cook an egg, how to clean shoes, and variable customs such as why one should not speak with one's mouth full. In all these cases, the child finding itself in the middle of living situations learns to evaluate and understand, often by imitation, sometimes by first misunderstanding what is to be thought or done. These fluid learning moments enable the child to think creatively (even if wrongly) and to develop a sense of what is needed in the situations. Their questions do not always look for answers but simply wait to hear the parent respond, to find out whether the issue is ok, whether there is any need to be frightened, whether anything fundamental has changed. Chatbots avoid these human touches. Human answers tend to incorporate the puzzlement of the questions asked, to recognise where they come from, what lies behind them, what they really mean. Unless teachers are totally insensitive, they recognise the probable origin of the puzzlement in the questions of pupils. They know the cognitive range of this age group and can predict their cognitive and emotive blocks. They can trace a path forward so that some basic puzzles can be eliminated in the future. Like Uncle Pete, Chat GPT is not in conversation with the questioner in any human sense and is basically not interested in what the questioner is asking. The programmes inability to read what is behind the question, not to mention its inability to apply its references to other areas of life is more significant for educators than its accuracy, whoever

¹⁰ Virginia Dignum, "The Role and Challenges of Education for Responsible AI.," *London Review of Education* 19, no. 1 (March 2021): 3.

might be able to judge that.¹¹ General warnings continue to be published by OpenAI, noting the possibility of racist and divisive categories that might have slipped unflagged into the requested information (See <https://platform.openai.com/docs/chatgpt-education>). No doubt these internal programme weaknesses will be ironed out over time,¹² but the problem for education is that creativity requires retention of the fluid character of a conversation more than it needs the data to be accurate. No one is going to learn much from Uncle Pete.

Perhaps I should not be so equivocal. Some lessen these worries, arguing that ‘we can do more, better and faster, thanks to the support provided by AI.’¹³ Similar unreserved support comes from Bayne who presented an account of a Teacherbot communicator developed at the University of Edinburgh. Known to students as Botty and originating in an information source capable of answering student questions in a conversational style, this interactive platform, judging from the examples given, presented students with ‘identity’ queries referring to the Bot itself. While ‘conversations’ with Botty queried Botty’s existence in a fun way, they provided no evidence that students thought of the MOOC environment as a ‘posthumanist gathering,’¹⁴ mixing human and the natural-material order, all blended in one learning context. Despite a greater dynamism afforded them by a Bot capable of scraping data from live Twitter accounts by comparison with ChatGPT, these students obviously still seemed determined to insist on their own separation from machines. Returning to this question some years later, Breines and Gallagher give a more sober account of the contribution of Teacherbots. Now they are imagined as an aid to a ‘particular teacher function’ while researchers seem to have scaled back on the conversational ambitions of the original experiment.¹⁵ In keeping with the thought-frame behind the original experiment, however, these writers continue to object to any suggested binary separating human from machine and in place of this binary, they suggest the adoption of a ‘community-driven approach.’ Whatever they mean by this is, however, unclear.

Hence, a case could be made for the more limited acceptance of ChatGPT and various AI tutoring programmes. After all, Jacques, Moss and Garger taking up the studies of Floridi et al (2018) and Yanes et al. (2020) argue:

¹¹ See for instance Enkelejda Kasneci et al., “ChatGPT for Good ? On Opportunities and Challenges of Large Language Models for Education.,” *Learning & Individual Differences* 103 (April 2023): 7.

¹² See for instance Gimpel, H., Hall, K., Decker, S., Eymann, T., Lämmermann, L., Mädche, A., Röglinger, R., Ruiner, et al., “Unlocking the Power of Generative AI Models and Systems Such as GPT-4 and ChatGPT for Higher Education: A Guide for Students and Lecturers” (University of Hohenheim, March 20, 2023., March 20, 2023).

¹³ L. Floridi, “AI4People-An Ethical Framework for a Good Society: Opportunities, Risks, Principles, and Recommendations.,” *Minds and Machines* 28 (2018): 692.

¹⁴ Sian Bayne, “Teacherbot: Interventions in Automated Teaching,” *Teaching in Higher Education* 20, no. 4 (2015): 457, <https://doi.org/10.1080/13562517.2015.1020783>.

¹⁵ Markus Roos Breines and Michael Gallagher, “A Return to Teacherbot: Rethinking the Development of Educational Technology at the University of Edinburgh,” *Teaching in Higher Education* 28, no. 3 (2023): 518, <https://doi.org/10.1080/13562517.2020.1825373>.

By analysing vast datasets and simulating human-like reasoning, AI systems personalize learning experiences, automate administrative tasks, and augment research capabilities, advancements that enhance the efficiency, effectiveness, and inclusivity of education at all levels.

This positive accolade is always issued with several caveats reflecting a less than enthusiastic endorsement of AI by other educators, particularly philosophers, who like Dreyfus, worry about the use of metaphors, such as the ‘computer metaphor of mind.’ Dreyfus argues against anchoring knowledge to the symbolic representationalism of AI¹⁶ and while I cannot develop this reading of Heidegger here, we are back to arguments about the salience or otherwise of using instrumental reason (symbolic representationalism) as a model of human thinking and a social model for representing human intelligent practice. Certainly, this debate, which emerged some years ago with definite sharpness in the work of Dunne¹⁷ and in subsequent engagement between Dunne and MacIntyre,¹⁸ asked whether human reason exhausts the range of intelligence open to human beings, even in their formative years.

My own position is now clear on several points. The first point is that the way machines ‘learn’ is radically different from and not comparable with the way humans learn, no matter how often the term ‘machine-learning’ is used. Humans principally learn from other humans and only then from machines in social settings. The second point is that humans learn in the first instance language and culture, as Gadamer and others have suggested, and through language come to data. Even in the few remaining tribes which have not encountered the outside world in the jungle of Venezuela or Brazil, members need to learn how to speak and how to listen before they can learn how to commit anything to memory or think in a human way. It is clear from some exceptional cases of abuse that children isolated from, company for their initial seven years are incapable of learning human language or understanding the way humans behave.¹⁹ No one is a lone wolf. The third point runs counter to the traditional view of the self as an individual. This is the thought that every human being is born with a biological footprint that incorporates in its identity the identity of others, especially mothers and immediate carers, and on this account will never be individuals, except in a derived sense. People learn to be selves always in mediated proximity to others. The pedagogical issue is not an individual learning from AI. The pedagogical issue is a human society learning from AI. This is where I would see a ‘community-driven approach.’²⁰ The lockdown of Covid

¹⁶ Hubert L. Dreyfus, “Why Heideggerian AI Failed and How Fixing It Would Require Making It More Heideggerian,” *Philosophical Psychology* 20, no. 2 (April 2007): 247–68.

¹⁷ Joseph Dunne, *Back to the Rough Ground: "Phronesis" and "Techne" in Modern Philosophy and in Aristotle* (Notre Dame, Ind: Notre Dame University Press, 1993).

¹⁸ Joseph Dunne, “Learning from MacIntyre about Learning: Finding Room for a Second-Person Perspective,” *Journal of Philosophy of Education* 54, no. 5 (2020): 1147–66.

¹⁹ See my account of Oxana Malaya in Fiachra Long, *Educating the Postmodern Child*, Bloomsbury Philosophical Studies in Education (London\ New Delhi\ New York\ Sydney: Bloomsbury, 2013), 35–36.

²⁰ I develop these thoughts elsewhere. See Fiachra Long, *Essays in the Phenomenology of Learning*, New Directions in the Philosophy of Education (London and New York: Routledge, 2023).

taught us that being physically cut off from others is a damaging experience. It seems obvious to conclude that online contact is never adequate to isolation. Ask the thousands of music fans who will pay exorbitant prices for tickets to rub shoulders with people and dance together even with strangers. Of course, present culture includes digital technology, but its impact should be measured according to anthropological principles rather than the reverse. Often it is the reverse that happens to be stressed because techlords need to justify their investment, a point made forcefully by Schiff.²¹ But in doing so, it is the character of knowledge itself that is compromised by the inexorable shift towards 'facts' and away from the dynamism of 'ideas' in a Platonic sense.

This point came home to me in a personal way when I went to the States first and taught a second-year college course on Ethics 201 Strange to relate, these students confronted Leibniz's notion of predestination unimpressed by whether Caesar had been predestined to cross the Rubicon. They remained indifferent to learn that Caesar was a type of king or that the Rubicon was a river. While, in Europe, I had sat conventionally silent and moderately interested, as lecturers presented the text in question, this was the USA and these non-specialist students with a new world mentality demanded something different. With the Dean of Faculty sitting at the end of the room deciding on my fate as a part-time adjunct, the situation was precarious, to say the least. Some conversational rabbit had to be pulled out of the hat! Spotting some bubbly young students, I immediately asked them to imagine themselves looking across the dance floor at a Freshers Ball. Were they looking for the partner of their dreams (the one that they were predestined to meet)? Amazingly, this was a burning issue for many of them. Suddenly Caesar, the Rubicon, and Leibniz's *Discourse on Metaphysics* faded from view. Hands shot up and energized students, particularly females, expressed their opinions on whether meeting the partner of their dreams was a valid idea. This debate, as I later learned, was 'conversation' as Dewey and Mead had imagined it. Moments of revelation announced the transition of thoughts from a private space to the public space of contest and listening, a democratic space. Participants exchanged their opinions, refined their arguments, and found exuberance in the conversational exchange that had suddenly erupted. I could not have wished for better to impress the Dean because opening the space to general conversation was the key to success. What the students knew about Leibniz at the end of the day seemed to matter less than the fact that the idea of predestination had become a viable question in their lives.

My forbearing students in Ethics 201 would not have been impressed by polished arguments about Leibniz's text. They needed to be involved in the cut and thrust of a question fraught with relevance to enable them to test out the plausibility of various positions. They needed some conversational nudges to set them off on a series of reflections. Without reference to live experience, we return to remote third person knowledge. Chomsky is correct to set great store by the human ability to name current experience. This is the basis for all

²¹ Daniel Schiff, "Education for AI, Not AI for Education: The Role of Education and Ethics in National AI Policy Strategies.," *International Journal of Artificial Intelligence in Education* 32 (2022): 527–63.

historical understanding, and it is hugely significant for human learners and for the ‘conversations’ that help them to develop them as thinkers. This is the element missing from ChatGPT.

I propose here to present initially a *prima face* case for conversational learning deriving from the progressive ideas of Dewey and Mead. Two more contemporary writers describe different features of conversational exchange. Bruno Latour speaks of the *contested* space of scientific research while Jürgen Habermas outlines the *communicative* features required for political engagement in such a space. The claim here is that these features of human-to-human interaction are missing from AI-based learning, even with careful planning. The ChatGPT platform are simply not flexible enough even with careful teacher planning to deliver these features, or so I will argue.

A prima facie case for human conversation

G.H. Mead proposed that all human thinking is a kind of complex, social interaction. When human beings think, they do so by relating to several selves that emerge through social interaction. The ‘I’ talks privately to these social selves, the set of socially generated ‘I’s’ that reflect the environment in which persons find themselves. Indeed, talking to oneself as it emerges in many of its past social presentations is exactly what happens when human beings think.²² This type of social interaction is necessary for self-reflection. In a similar vein, Dewey proposed that formal learning (school learning) should be modelled on the informal encounters children experience. Hence, he identified progressive education with social learning²³ and so was able to conclude:

As matter of fact every individual has grown up, and always must grow up, in a social medium. His responses grow intelligent, or gain meaning, simply because he lives and acts in a medium of accepted meanings and values. Through social intercourse, through sharing in the activities embodying beliefs, he gradually acquires a mind of his own. The conception of the mind as a purely isolated possession of the self is at the very antipodes of the truth. The self achieves mind in the degree in which knowledge of things is incarnate in the life about him; the self is not a separate mind building up knowledge anew on its own account.²⁴

This image of the self as a social reality runs counter to earlier accounts of soul and post-Cartesian accounts of ego and it means that thinking itself as well as human identity is a social event, a ‘conversational’ phenomenon. This excerpt imagines what Mead called a ‘generalized other,’ an imaginary being we rely on and with whom in our private moments we hold elaborate conversations. It is not so much that we are a ‘they’ but rather that they

²² George H. Mead, *Mind, Self and Society*, vol. 1, 3 vols. (Chicago and London: University of Chicago Press, 1934).

²³ John Dewey, *Democracy and Education* (New York: Dover Publications, 2004), 9.

²⁴ Dewey, 283.

are a 'we' amid which humans are enabled to 'think'.²⁵ This occurs even when we think to ourselves. Arising from the importance of social connections, Dewey imagined a far livelier kind of classroom than the rote learning-based classroom he had experienced himself. There would have to be group projects, team-forming, and carefully designed games to pick up on the informal learning habits of children. Teaching methods would draw on Herbart's insights into the preparation of children's learning, but these would be extended to include a new political 'space,' a conversational space supporting keen democratic principles. In Dewey's account, this space would connect learners to the progress of society itself. The critical knowledge to be learned would be linked to what is current and evolving in wider society.

The key thought that is relevant to our theme of conversational learning is that 'progressive' knowledge is anchored in historical time, adjusts to current circumstances and, as a result, is constantly in motion. This learning is multi-dimensional, adjusting laterally to new discoveries as they occur including new technologies such as AI-tools and vertically to deepen critical insight into the meaning of these developments. These features of learning—the lateral and the vertical—modify our understanding of who we are. Knowledge is not content but participation in a stream of understanding. Plato made a distinction between the knowledge of the gods who understand things in a stable manner and by means of insight, and other important kinds of knowledge such as the best way to live or the best *polis* to promote human wellbeing. Because morality and politics could never free themselves from opinion, political knowledge would always be contested among humans and would remain inferior to mathematics and the knowledge of the gods. Because our opinions connect with our senses rather than with any godlike insight, things encountered in a sensory way are stable only in a derived sense. Hence the importance of philosophers (i.e., scientists) who, in Plato's view, have achieved knowledge marked by stability and changelessness:

Since those who are able to grasp what is always the same in all respects are philosophers, while those who are not able to do so and who wander among the many things that vary in every sort of way are not philosophers, which of the two should be leaders in a city? (Republic 484b)

Changeless knowledge is challenged by the pragmatism of Dewey and Mead and excludes Plato's esteem for 'stable and unchanging' knowledge. Instead, they promote a form of quasi-fluid knowledge that is historical in character and subject to change. The real problem for learners, as Dewey saw it, was to achieve the self-confidence and 'thinking' ability to accept the historical character of this kind of knowledge. Learners may prefer to believe that the knowledge based on the authority of parents or teachers is stable and fixed, but their subsequent education pushes them away from this idea. Summing up this situation, Dewey identifies 'traditional knowledge' with information and skills of the past that educators judge 'stable' enough to be 'transmitted' to a new generation. Hence the proper learning attitude

²⁵ Mead, *Mind, Self and Society*, 1:152ff.

is one of ‘docility, receptivity and obedience.’²⁶ In a way ChatGPT can assume this authority profile and without skilful pedagogical handling can induce obedience. It is a little more flexible than my uncle Pete because it will change its answers, modify its language, even provide references on request, many of them accurate, but the line of command is still firm. Students can be trained to critique these answers in various ways and thus not to be too submissive to what is produced, but any Vygotskian subtlety in teaching is a huge challenge when finished product lies within easy reach. How wonderful it is to witness really good teaching where the teacher gets into the mind of the learner and almost reads their questions before they ask them! Perhaps presenting students with an AI-generated world situation might get them to reflect more from a stance in the middle of those situations. This was the idea behind the printing press Dewey set up in his school in Chicago which enabled pupils to learn how to print and to question the whole process from within, as it were. The *papier mâché* mockups of mountain ranges enabled pupils to measure and collaborate in building a map; the staging of a restaurant scene gave pupils the opportunity to speak French to realize what they needed to speak it. These activities took place in what Dewey called a ‘simplified’ environment designed to follow a particular pattern:

The first office of the social organ we call a school is to provide a simplified environment. It selects the features which are fairly fundamental and capable of being responded to by the young. Then it establishes a progressive order, using the factors first acquired as a means of gaining insight into what is more complicated.

Both simplification and the elimination of unworthy elements are required to enable the young to imagine how best to operate in complex societies. In each case pupils learn by associating with one another and creating a form of knowledge useful in more complex social situations. Hence ‘progressive learning’ requires the awareness and design of such situations. One hundred years after *Democracy and Education*, social media and AI tools have given children access to plenty of unworthy material along with psychological suggestions and images that they may not yet have the maturity to manage. Mead and Dewey present a *prima facie* case for connecting education to conversational learning rather than representational or image-based learning. Let us turn now to two more contemporary writers who have identified features of conversation that challenge the remoteness of AI knowledge and help to focus on two features of conversational learning.

Latour on the ‘contested’ character of knowledge

Bruno Latour proposed that science itself is already political, contested, and susceptible to social and economic influences.²⁷ He famously contended that ‘science is politics by other means’ (the SIPBOM principle).²⁸ We can see evidence of this principle in the resources found to fund medical advances to eliminate certain diseases: polio, leprosy, malaria, various kinds of cancer, pandemics certainly. Natasha Loder in *The Economist* (March 30, 2024: 11)

²⁶ J. Dewey, *Experience and Education* (New York and London: Collins Macmillan, 1988), 18.

²⁷ Bruno Latour, *Science in Action* (Cambridge, Ma: Harvard University Press, 1987).

²⁸ Eve Seguin and Laurent-Olivier Lord, “Bruno Latour’s Science Is Politics by Other Means: Between Politics and Ontology,” *Perspectives on Science* 31, no. 1 (February 1, 2023): 10, https://doi.org/10.1162/posc_a_00579.

notes that between 25%-50% growth in health expenditure in OECD countries has been due to advances in technology. Scientists can even offer paraplegics the hope of walking again. But we can also see this same overlap between technology and economics working in most scientific projects, including the Manhattan project (1942-46), which led to the development of the first atomic bomb. The impact of such 'non-human' objects extends beyond the technological specifications of high-grade weapons to include the propaganda, economic strategies and government policies used to support the project. The entire reality of a scientific project is 'compositionist' in nature and requires not only the combination of various factors but a contest between them for funding and attention. New 'non-human objects' emerge from such contestation into the space of inquiry in every domain, since all such spaces remain open to power interests of various kinds.

The same dynamic works across all fields of human endeavor, including sport. For years, people learning the high jump would use a scissors motion, lift one leg then twist the body in mid-air lifting the second leg over the bar. Then, in 1968, Dick Fosbury came along and changed the technique. Was it legal? Could it be adopted by others? A certain debate followed. Now the Fosbury flop is the norm for high jumping. Similarly, the history of the freestyle in swimming moved from breaststroke at the end of the nineteenth century to front crawl under the influence of American and Australian coaches. This technique has continually evolved, incorporating variations in breathing techniques and kick-stroke ratios. The point is that these skills became 'contested.' Their development depended on the political and economic support of Governments, Sports Councils, and various manufacturing and funding agencies. Each norm presented a claim within the contested space of skills that is continually mined by coaches in the hope of improving athlete performance.

Sometimes no consensus is achieved, even on basic principles. Einstein's vision of atomic order contrasted with Neils Bohr's vision of subatomic chaos, and the two never agreed. This public disagreement shows that even a paradigm among scientists is not always shared and may give rise to ruptures, as Thomas Kuhn famously contended,²⁹ but Latour notes that ruptures are rare since scientists draw their lifeblood from conversation and debate. Apparently, even scientists who disagree on principle prefer to maintain shared professional conversations. They recognize that basic principles can be wrong and need to be placed constantly under review. For this reason, educators need to resist telling students what to think and what to know in favor of teaching them how to think and how to know because if a paradigm is ever challenged and radical adjustments are ever needed, their knowledge needs to demonstrate flexibility as an ongoing feature of science in action.

Latour's idea that science develops out of a contested space is well illustrated in the development of ChatGPT itself. Writing in *The New Statesman*, Harry Lambert explains how Geoffrey Hinton had worked against the grain since the 1950s to establish a neural network

²⁹ Thomas S. Kuhn, *The Structure of Scientific Revolutions*, 4th Edition (Chicago: University of Chicago Press, 2012).

as a model for computer memory.³⁰ The norm in the development of computer memory for years had been to use logical connectors and probability theory (*symbolic-AI*), but Hinton noted that the human brain generates neural pathways more by association than by strict logic. The hippocampus connects stimuli to sectors of the brain governing various senses, motor capacities, and emotional memory in the amygdala whose combination presents each individual with a rich learning matrix. For a long time, such complexity seemed too unfathomable to be useful to computer programming engineers. And yet Hinton's team worked on a special algorithm that aimed to replicate some of the neural patterns they knew from brain imaging etc. This approach seemed fanciful to other researchers who largely ignored Hinton's theory published in 1986. There followed for Hinton and his team years of marginalization in a contested space dominated by symbolic-AI i.e., memory based on truth functions. His theory continued to be dismissed until 2012 when a prototype he designed outperformed competitors in an ImageNet Challenge focused on facial recognition. After publishing their Alex Net paper in 2014, Hinton and his colleagues established DNNResearch and moved his \$44m company under Google where he became one of Google's leading researchers in AI until he resigned in 2023. Since then, neural network AI, like the Fosbury flop in High Jumping, has become the established paradigm, replacing symbolic AI in computer memory engineering. The point is that these scientists remained in the same contested space because they focused on the same objective problem, to make computer memory more efficient, even more human-like. They shared this objective and remained in dialogue even while each group adopted different methods.

The SIPBOM principle also applies to climate change. Here priority is given to investment in contested products and systems. Sequin and Lord note that the 1997 Kyoto conference on climate change resulted in the design of an entire range of solutions for climate change, including solar farms and windfarms, the production of plant-based fuels versus more refined fossil fuels, together with other *nonhuman objects* like laws, protocols, and Government-endorsed strategies. For Latour, the truth prevailing in such initiatives belongs to the 'space' where rival claims enter a contest, where the main objective is not necessarily agreement but a collaborative association, where dialogue continues to be highly valued. This is clearly a pragmatic view in Dewey's sense. Particular claims are not as important as the 'space' in which they appear and engage with other claims. If this is what scientific knowledge means, then how is this contested quality replicated in classrooms? How are learners introduced into the culture of contested knowledge claims if they think that knowledge is already stable and fixed? One could respond by saying that the thought that knowledge is stable helps learners avoid skepticism while they will learn how contested claims contribute to science at some later stage. But the issue is whether they will ever learn how to 'contest' claims if they think of knowledge as polished and finished.

There is no reason why classrooms and indeed the learning mind might not become a laboratory in the way Mead and Dewey intended for their progressive schools. The normal

³⁰ See <https://www.newstatesman.com/long-reads/2023/06/men-made-future-godfathers-ai-geoffrey-hinton-yann-lecun-yoshua-bengio-artificial-intelligence>

way classrooms create a contested space for learning is through the skillful art of questioning. Questions that push student thinking are more valuable than questions that silence inquiry. I remember one High School Mathematics whose style while teaching the senior classes was to stumble through complex equations making mistakes left and right as he went. The class group kept correcting him until he finally let them off to work out the issue themselves in pairs and on whiteboards located all around the walls of the classroom. He finally got them to explain their thinking to him. They all loved the lessons. Students were able to argue their thinking in the contrived contested space of the classroom. Those with talent achieved a high mathematical standard and went on to become Mathematicians and scientists. Incidentally, many of the students thought of this teacher as moderately stupid, unaware that he had written the senior Physics textbook in another language. Not many teachers I knew could adopt such a profile as a teaching strategy, even if the school staff knew why this man was a teacher-ace. The point is that creative learning will always call for forms of contestation, however contrived, and this applies to every area of study.

I think of questioning as something the teachers do rather than something the students do. If the questioning is successful, the students begin to ask questions in response. ChatGPT typically waits to be asked a question. Classrooms typically using ChatGPT would need to place it as a service in the background, not the foreground. In the foreground, we still keep in mind Buber's contention that the purpose of education is character formation where human encounter is one of its most important outcomes.³¹

Habermas on the communicative character of knowledge

Science cannot move forward in a warped space where certain 'facts' are censored or even dismissed for political reasons. Jürgen Habermas, while researching at the *Institute for Social Research* in 1956, found that little had changed in the mindset of German students compared to ten years previously. This study, published in 1961, found that the democratic project had still not been accepted by many German youths or at least that they had not understood its significance. Disappointed with this result, Habermas pointed to the political blindness caused by the predominance of 'instrumental rationality' promoted in German schools. His essay 'Moral Development and Ego Identity' drew on developmental theories of learning, including the symbolic interactionist theories of Mead and Dewey to argue against adopting an authoritative mindset in teaching. Summing up this project, he concluded:

The political culture of the early Federal Republic was marked by a gulf between fragile democratic institutions and barely disrupted authoritarian mentalities. In academia, as in almost all functional domains, there was an unbroken continuity at the level of personnel. The intellectual trailblazers of the old regime, with a few exceptions, had survived the denazification process unscathed.³²

³¹ Alex Guilherme, "AI and Education: The Importance of Teacher and Student Relations," *AI and Society* 34 (2019): 47–54, <https://doi.org/10.1007/s00146-017-0693-8>.

³² Jürgen Habermas, *Philosophical Introductions* (Cambridge UK/Medford MA: Polity, 2018), 122.

These findings certainly reflected my own experience of a Stasi-infested higher education system I found in East Germany on study visits during the mid-1980s. When the Berlin Wall came down, the same people stayed in charge. No wonder then that Habermas's ground rules for communicative rationality has found an echo in Latour's concept of contestation. Universal pragmatics would provide a set of ideal norms governing communication in contested spaces. He wondered what might constitute communicative reason in its most ideal state and presented four, now well-known rules, governing ideal speech:

- Comprehensibility: 'uttering something understandably'
- Truth: 'giving [the hearer] *something* to understand'
- Truthfulness: 'making *himself* understandable'
- Rightness: 'coming to an understanding *with another person*' ³³

To combine these operations in a politically contested space, Habermas would also require certain relatively unspecified 'moral-practical forces' to be in vogue in society. The problem is that these forces remain contingent and relatively undefined, requiring legitimation. In a limited microcosm of society, such as a classroom, where teacher and students are interacting, peer to peer interactions can be enabled through the careful design of groupwork and information exchange. This requires a whole system of moral and political values to be in place, including teachers' willingness to promote the wellbeing of the children in their care and the school not promoting fascist or fundamentalist ideologies etc. One could imagine ChatGPT playing some role as a 'moral-practical force' in this conversation, but its track record as an impartial force is flawed at present and would need careful handling by skillful teachers.

Of course, care is needed when applying rules of truth and sincerity to what is proposed as knowledge. Propagandist discourses can seem to be sincere and to be true, but a critical spirit needs to prevail to avoid propaganda-led instruction either by the teacher in person or ChatGPT as a teacher in lieu. What 'moral practical forces' might be at work to ensure the truth in situations where universal truth conditions cannot be tested, such as in a text composed by Chat, unless these texts become part of a conversation where the truth of experience becomes the critical test? What critical criteria could be invoked to guarantee 'the establishment of undistorted communication?'³⁴ Not merely rational coherence (criterion 1) but fundamental critique underlying the communication would be needed. Indeed, communication needs 'the dialectic of knowing and not knowing to be embedded in a dialectic of successful and unsuccessful mutual understanding.'³⁵

Let us imagine that teachers had used communicative rationality in an open conversational environment, then the hope is that authoritarian dogmatisms could be avoided, concepts could be explored, self-confidence enhanced. This would be a democratic space of learning

³³ Jürgen Habermas, *Communication and the Evolution of Society* (London: Heinemann, 1979), 2.

³⁴ Habermas, 120.

³⁵ Habermas, *The Philosophical Discourse of Modernity* (London: Polity, 1987), 324.

where communicative exchanges, creative suggestions, even left-field opinions would enter the fray. Teachers would have to be happy with learning outcomes that are in some sense fluid. They would be willing to tolerate what Habermas later called ‘shared counterfactual presuppositions of participants in conversation.’³⁶ It might be hard for teachers to admit the fallibility of knowledge in this sense when it seems easier to teach ‘objective’ facts such as $2+2=4$ or the sceptical view that the only truth lies beyond normal human abilities (the domain of the gods). The operation of conversational learning would lead participants to accept the fallibility of human understanding which, rather than leading to skepticism, would instead lead learners to conclude that, even on matters of science, ‘linguistically attained consensus does not eradicate from the accord the differences in speaker perspectives but rather presupposes them as ineliminable.’ If one accepts the logic of communicative rationality, then the teacher learns to promote this kind of contestation as students interrogate personal experience:

In fact, partners in conversation, however much they may be strangers to each other, can in principle learn from each other in discourse and can at the same time test what they have learned through their dealings with the world that they jointly assume to be objective.³⁷

The point is that teachers can develop the discourse of classrooms in such a way that learners come to accept the frailty of scientific knowledge without either falling into skepticism or the idea that Google knows everything one needs to know. One way of doing this is to adopt what the English-writing educator, Kenneth Bruffee has called ‘collaborative learning.’ Bruffee argued for the use of ‘the power of peer influence on learning,’³⁸ reflecting the social interactionism of Mead and Dewey. He saw that students working collaboratively on questions or projects share their ideas with more enthusiasm and, when challenged by their peers, exchange thoughts more carefully when they think they are in the process of contributing to a collective outcome. While students generally react enthusiastically to questions that interest them, comparable enthusiasm is absent as they listen passively to experts. In that case, their tendency to defer to experts leads them instead to imagine knowledge as remote. As Bruffee explains:

We establish knowledge or justify belief collaboratively by challenging each other’s biases and presuppositions; by negotiating collectively toward new paradigms of perception, thought, feeling, and expression; and by joining larger, more experienced communities of knowledgeable peers through assenting to those communities’ interests, values, language, and paradigms of perception and thought.³⁹

This sounds somewhat Habermasian. Bruffee advises teachers to use more groupwork and inquiry in their lessons to respect the dynamic context of human learning. Collaborative

³⁶ Habermas, *Philosophical Introductions*, 157.

³⁷ Habermas, 157.

³⁸ Kenneth A. Bruffee, *Collaborative Learning: Higher Education, Interdependence, and the Authority of Knowledge*, Second (Baltimore and London: The John Hopkins University Press, 1997), 638.

³⁹ Bruffee, *Collaborative Learning: Higher Education, Interdependence, and the Authority of Knowledge*, 646.

groupwork means that the group must work as a group on a task, combining the collective insights of members and generating an outcome that belongs to all, following feedback. Fragile conversations issue from contested spaces provided that certain communicative rules are respected and observed. Students are motivated to share not only their clarities but their puzzlement. Even half-baked ideas have their place. Once they retain their critical edge, students can then select relevant materials, their reading, their online searches, to feed into their final report. More recently, the Committee on the Development in Science and Learning (2000) agreed with this conversational approach, noting that ‘robust knowledge and understandings are socially constructed’⁴⁰ and that students learn to construct scientific meanings by negotiating conflicts in beliefs and understandings.⁴¹ This Report quotes the Nobel Laureate, Sir Peter Medawar, on this point:

The purpose of scientific enquiry is not to compile an inventory of factual information, nor to build up a totalitarian world picture of Natural Laws in which every event that is not compulsory is forbidden. We should think of it rather as a logically articulated structure of justifiable beliefs about a Possible World—a story which we invent and criticize and modify as we go along, so that it ends by being, as nearly as we can make it, a story about real life.

Notice that this model of ‘conversation’ is both more dynamic and more fallible than that used by inputters with ChatGPT. The review feature of ChatGPT gives the impression of a more in-depth response, but the dialogue is very linear, and Chat tends to accommodate itself to the ‘bias’ or pre-existing ‘interest’ of the inputter. Even if biased content is gradually removed from these responses, learners by this process still form the impression that knowledge stands removed from contestation and rational dialogue and is the prerogative of experts who should be listened to and obeyed. Nevertheless, Jacques et al. note how AI tools can help students exchange insights and explore different perspectives on a topic or problem.⁴² One study noted that student interest increased the more human the AI tool appeared, but there is no agreement on whether it is good to design these tools further as ‘smart human’ or generally dumb.⁴³ The issue really is how to prevent the medium itself becoming the message.

Conclusion

More than anyone, Mead noted how reflection requires the silent conversation we have with ourselves. This silent conversation becomes a faint echo as we think of other things, enabling what we learn to enter the field of *new* knowledge, connecting us back to our intimate background experience, including culture, significant others, and even the

⁴⁰ National Research Council, “How People Learn: Brain, Mind, Experience, and School” (The National Academic Press, 2000), 184, <https://doi.org/10.17226/9853>.

⁴¹ My thanks to Rory Geoghegan of the Irish Science Association for alluding to this study in conversation.

⁴² Paul H. Jacques, Hollye K. Moss, and John Garger, “A Synthesis of AI in Higher Education: Shaping the Future,” *Journal of Behavioral and Applied Management* 24, no. 2 (2024): 105.

⁴³ Amanda J. C. Sharkey, “Should We Welcome Robot Teachers?” *Ethics and Information Technology* 18, no. 4 (2016): 283–97, <https://doi.org/10.1007/s10676-016-9387-z>.

assumptions built into the language we speak. We need to be confident not to shut ourselves off from this process. The complexity and size of the human brain obviously affects the quality of human self-reflection in contrast to other animals but the quality of human relations, the conversations in which people participate, are also crucial to retaining the predominance of the human species on the planet. Automation, as it is now promised through AI technologies, could well be a backward step, demotivating students from the challenging work of learning.

I have argued here that two features of human conversational patterns are missing from AI, namely, ‘contestation’ and ‘communicative rationality.’ It will be important in the age of ChatGPT to organize our classrooms around these two conversational ingredients if we are to retain the link between learning and the natural and human sciences of the human tradition. It would seem important to explore the use of AI tools using the rubric of collaborative learning. This opens one obvious way for ChatGPT to complement rather than replace human interactions. New perspectives are constantly required. What humans need and what lies at the social basis of all learning is interaction with other people. This is what they need to be educated in a fully human way.

I still think that education as an overall project must be established on a humanistic basis. In keeping with this belief, I want to avoid using ‘instrumental reason’ as a model for human intelligence, and I think that computer scientists working in the field of computer memory would probably agree. Computer engineers seem caught at a crossroads, wondering whether to enable computers to develop a broader range of human-like functions or whether to confine their development to a more ‘stupid’ profile. Educators also seem to be in a quandary about their use of AI tools in the classroom. The answer to these quandaries cannot be to speculate about a new blend of humanism and automatism in one common bioform. We need to be careful not to make computer actions appear more human than they are, using terms such as ‘thinking’, ‘answering’, ‘responding’, ‘learning’ and ‘deciding’ to explain what they ‘do.’ These metaphors offer a distorted description of what is happening and leads us to support Dignum’s contention that ‘the traditional separation between humanities, arts, social sciences and STEM is not suitable to the needs of the digital age.’⁴⁴ This suggestion carries huge consequences for higher institutions of learning founded on the separation of the arts and the sciences, but it seems clearly significant for discussions about the ethical use of these technologies which seem both unstoppable and inhuman in equal measure.

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⁴⁴ Dignum, “The Role and Challenges of Education for Responsible AI.”

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