# The Intuitive and the Counter-Intuitive: AI and the Affective Ideologies of Common Sense

*Carolyn Pedwell*

**Abstract:** Animating the relationship between affect and ideology in histories of artificial intelligence, this paper explores how the transatlantic post-war quest to engineer common sense via computational means has profoundly shaped both the social logics of machine learning systems and the sensorial politics of everyday knowledge production. Focusing on the Cyc project, a logic-based AI endeavour to 'codify human common sense' which began at the USA-based Microelectronics and Computer Technology Corporation in 1984, and making links to MIT Media Lab's Open Mind Common Sense Project inaugurated in 1999, I trace how the imperative within late twentieth-century computer science to make intelligent systems more intuitive by translating implicit human knowledge into explicit machine knowledge involved not only mathematical and technological challenges but also affective, ideological and socio-political ones. In tracking the interactions between intuition and common sense across these genealogies of machine intelligence, I tease out some of the key atmospheres, processes, and correlations via which AI technologies have become embedded with ideology, normativity and prejudice at the levels of logic, procedure and data. Through adjudicating the meanings of reason, truth and perceptibility as matters of algorithmically calibrated fit and popularity, intelligent architectures are also radically reconstituting the intelligible and the sensible – in ways, I argue, that complicate any notion of a clean epistemological or ontological break between first and second wave AI. Dwelling within

these unfinished histories, however, also points to how inhabiting counter-intuitive tendencies may open up new possibilities for (un)common sense and distributed intuition within computational cultures.

**Keywords**: Affect, AI, common sense, Cyc, intuition, Open Mind Common Sense

This article explores how affect and ideology are entangled, mediated and transformed within post-war histories of artificial intelligence and the technoscientific investments, practices and atmospheres surrounding them in North America and Britain. Focusing on the Cyc project, a symbolic processing AI endeavour to 'codify human common sense' which began at the USA-based Microelectronics and Computer Technology Corporation in 1984, and making links to MIT Media Lab's Open Mind Common Sense Project (OMCS) inaugurated in 1999, I trace how late twentieth century computer science's imperative to make intelligent systems less brittle and more intuitive has involved not only fraught mathematical and technological challenges but also affective, ideological and socio-political ones. Cyc and OMCS are situated AI research endeavours, which reflect the techno-social particularities of their geneses in elite American universities and corporate research institutes. Yet I want to suggest that the involvement of some of the leading figures in post-war digital computing in these projects, alongside the pervasive conceptual and procedural issues that a focus on common sense raises for the efficacy of both logic-based and machine learning systems, makes them appropriate cases for thinking through some of the wider ontological and ethico-political concerns that have surfaced within and across different transatlantic waves of, and approaches to, AI.

I understand 'affect' broadly in this article as unfolding intensities which animate the flows, tensions and possibilities of everyday life, including our historical and contemporary relationships with digital technologies. I interpret 'ideology' mundanely, in the first instance, as 'a system of ideas and principles forming the basis of an economic or political theory' or a 'set of beliefs held by a particular group' (OED). Addressing both logic-based AI systems like Cyc and machine learning architectures like OMCS, I examine how, through the codification of common sense, affect is translated into cognitive propositions or quantities, and ideology (as a system of ideas) is embedded and amplified within computational ecologies. As machine learning consolidates as a pervasive environmental condition, I will argue, however, that ideology is perhaps best understood as *correlational* – as, in the words of the digital media scholar Wendy Hui Kyong Chun, operating 'through and as correlations that reproduce inequalities'.[1]

In fleshing out how affect and ideology have long operated as absent presences – as what is purportedly elided from computational architectures but continues to haunt the system – within AI projects of common sense, I aim to extend longstanding analyses of the techno-cultural reality of AI as, at once, an instantiated research project, industrial commodity and popular imaginary. Addressing affect-ideology entanglements in these transatlantic genealogies points, I will argue, to ontological and epistemological commensurabilities between waves of AI (i.e. between 'first wave' or logic-based AI and 'second wave' or machine learning AI)[2] which contest the conventional understanding of a significant break between them. As such, a key contribution of this article to affect theory, digital media scholarship, and critical AI studies is to illustrate how different generations of (or routes to) AI similarly struggle to synthesise common sense computationally, not only because varied

intelligent systems compensate for their inability to learn affectively by substituting probabilistic correlations for situated cognitive-sensory relations, but also because mainstream AI research has yet to fully confront common sense's pervasive political, ideological and ethical elements.

In the spirit of the provocation for this special issue – which asks that contributions unpack the relationship between a named affect and a named ideology – I approach 'intuition' as *affect* and 'common sense' as *ideology*, although as will become clear, intuition and common sense are overlapping and enmeshed in these socio-digital histories and each is composed of affective and ideological elements, along with a multiplicity of other worldly ingredients. Some clarification regarding my (somewhat elastic) rationale for these conceptual associations is necessary: In everyday life, we might understand *intuition* as an embodied premonition or a gut feeling based on experience. We might also define it more technically as fast thinking or direct sensing that eschews 'conscious analytic decomposition and recombination'.[3] The twentieth century French philosopher Henri Bergson figured intuition as a form of immersive engagement with the world that operates prior to, or in excess of, its translation into the parsing categories of analytical thought.[4] While these varied conceptualisations of intuition do not frame it as 'an affect' in the same way that we might regard, say, hopefulness, boredom, or agitation as affects or affective states, they do invoke intuitive intelligence as a sensory-cognitive mode of knowing, anticipating, and/or navigating the world that foregrounds affective attunement over rational deliberation. It is along these lines that I associate intuition with – without reducing it to – affect. As I will discuss, human intuition's tacit, embodied and affective qualities emerge as particularly significant in relation to computer science's longstanding quest to simulate it computationally.

In turn, *common sense* might be interpreted colloquially as 'good sense and sound judgement in practical matters' (OED). For the AI pioneers who sought to create intelligent systems better able to 'cope with the world's rough and tumble',[5] common sense constituted a set of neutral propositions about 'how the world works' that were amenable to computational translation.[6] This information processing view of common sense, however, stands at odds with rich traditions in cultural theory which foreground its political and ideological dimensions. Writing while imprisoned by Mussolini's fascist regime, the Italian political thinker Antonio Gramsci frames common sense as socially conservative in tone, and thus reflective of the worldview of the governing class, though not as uniform or without ambivalence.[7] Here, as in the more recent writing of Stuart Hall on neoliberal common sense or Wahmeema Lubiano on the contradictions of Black nationalism, common sense accounts of 'how the world works' frequently shore up hegemonic relations and protect the political and economic status quo from meaningful scrutiny. Common sense, as such, is not a 'named ideology' so much as it simply *is* 'ideology lived and articulated in everyday understanding of the world and one's place in it'.[8] I interpret common sense, in this vein, as imbricated with ideology, while also regarding it as *more than* ideological – a generative approach, I will suggest, for grappling with the unfolding digitally-mediated links among affect, knowledge, power and normativity, at the intersection of computer science, military-industrial AI research programmes and Big Tech.

In tracing the significance of the twin terms 'affect' and 'ideology' in these post-war genealogies of AI, I am interested in how human-oriented conceptualisations of intuition and common sense are invoked, simulated, translated and/or otherwise brought to bear in computational domains. In the decades following World War II, amid the advent of digital computing, interconnected efforts across mathematics, management, psychology and

neuroscience reframed intuition as a measurable and indexable form of expert knowledge[9] – which bolstered computer scientists' confidence that implicit human knowledge could be translated into explicit machine knowledge. Within first-wave or logic-based AI, intuition is associated with the capacity of computing systems to make increasingly complex inferences through employing logical rules. The (broad and partial) shift from this symbolic processing AI to machine learning between the 1980s and the new millennium involved the integration of probability and decision theory into AI, including the return to eighteenth-century rules of chance via Bayesian inference models. These processes supported the rise of 'artificial intuition'[10] as a generative, experimental and speculative mode of pattern recognition enabled by algorithmic architectures trained on vast quantities of data.[11] While the 'intuitive' inference-making capacities of logic-based AI rely on copious pre-programmed information, machine learning architectures can identify 'hidden correlations' by continually 'extracting features from [their] data environments'[12] – operations which generate statistically adjudicated forms of common sense.

If human intuition is associated with situated embodied and sensory knowledge, generative AI, including Large Language Models (LLMs), acquires, as the computer scientist and literary scholar N. Katherine Hayles suggests, 'a kind of intuitive knowledge' derived from 'the intricate and extensive connections that it builds up from the inferences it makes from its training dataset'.[13] Artificial intuition may thus be less relatable metaphorically to Bergsonian intuition – as a form of immersive engagement with the world that apprehends 'what is unique' and 'consequently inexpressible' in an object (*Introduction to Metaphysics*, p7) – than it is to the abductive reasoning associated with the twentieth-century American mathematician and pragmatist philosopher Charles Sanders Peirce.[14] Variously linked throughout Peirce's oeuvre to 'hypothetical thinking, imagination, intuition and guessing',[15]

abduction consolidates for him in the 1890s as a kind of inference involving the 'generation and evaluation of explanatory hypotheses'.[16] Relatedly, within current computer science literatures, the term 'abduction' (employed more commonly than 'intuition') describes emergent machine learning architectures which deploy abductive (rather than deductive) reasoning, 'so that what one will ask of the data is a product of patterns and clusters derived from the data' (*Cloud Ethics*, p47). As I will discuss, however, Peirce, not dissimilar to Bergson, associates abduction's intuitive qualities with distinctly human ways of knowing amid uncertainty, which are, in his view, antithetical to probability-based operations.

There are, therefore, it must be acknowledged, some real definitional issues at play in my discussion, given the often significant differences between human-oriented and machine-oriented accounts of both intuition and common sense. The visceral concept of intuition as gut feeling, for instance, may seem very different to the artificial intuition of machine learning with its iterative reinforcement loops and massive data sets, which operate automatically across durations incommensurable with human time, space, or sense perception.[17] Moreover, while Gramscian common sense grapples with how hegemonic political ideologies become embodied (and contested) in everyday life, common sense within Cyc and comparable AI systems may be interpreted as more akin to a rule of thumb to enable self-checking and knowledge extension. It might thus be claimed that what we are dealing with here are common words being used to describe fundamentally distinct processes. What such a perspective misses, however, are the pervasive discursive-material entanglements of human and machinic processes and propensities that animate both post-war digital computing and current generations of AI. Indeed, as I have argued elsewhere alongside others (*Speculative Machines*; *Intuition as a 'Trained Thing'*; see also *Cloud Ethics*), computational cultures are increasingly producing more-than-human forms of sensing, thinking and

speculating – such that human sensory and behavioural data shapes immanent machine learning decisions and human actions and insights are infiltrated by algorithmic parameters and probabilities.

Within first and second wave AI projects of common sense, computer scientists, corporate actors and tech journalists alike have, in their own ways, routinely mobilised human-oriented concepts and imaginaries to describe what intelligent systems do (or should aim to do). My interest is in teasing out the affective, material and socio-political implications of such epistemological orientations and invocations, particularly within computing research domains in which common sense is assumed to be universal, extractable and amenable to computational reconstruction. While acknowledging the often vast differences between organic and machinic learning, information processing and decision-making, my focus is thus not on assessing whether (or to what degree) synthetic common sense stacks up against humanoid definitions, but instead to ask how it works in extant systems – which involves inhabiting common sense's imagined and enacted relations with intuition across both logic-based and machine learning architectures. Within my analysis, intuition and common sense emerge as interlinked human-algorithmic composites which yield generative insights into socio-technical and affective-ideological manifestations of perceptibility, normativity and 'truth' in late twentieth-century AI.

After outlining prominent post-war AI experiments in engineering common sense, the first section of the article considers how neither systems like Cyc and OMCS nor state-of-the-art machine learning architectures have achieved anything comparable to human embodied, intuitive and sensory knowledge and navigation. And yet, the contemporary imperative is not, I will suggest, to negate the possibility of synthetic common sense; rather, it is to probe the

everyday truths, ideologies and cognitive-sensory modalities of experiencing the world that intelligent systems *do* produce and with what political, ethical and epistemological effects. Interrogating the Cyc project's implicit ideological underpinnings from the 1980s, the second section unpacks how, although common sense heuristics and analogies enable AI researchers and systems to increase efficiency and manage complexity, such shortcuts also often embed conservative ideology and align common sense 'truths' with dominant political atmospheres and interests. Despite their considerable differences in logic, procedure and data, then, both first and second wave AI systems, I will argue, generate computationally ordered modalities of common sense premised on tenuous correlations which fail to address both the sensory-cognitive entanglements and the sedimented power relations that shape everyday knowledge production.

The article concludes by considering how dwelling within these unfinished histories of human-machine relations might also enable a counter-intuitive philosophy and politics of AI with more expansive possibilities for distributed intuition, (un)common sense and collaborative sensing. I argue that inhabiting common sense as 'a site of political struggle' in current digital media ecologies entails both re-making the correlational logics of machine learning and reanimating the wider mediated links among affect, ideology and technology.

## Affect and the Codification of Common Sense

Despite bold claims on the part of Big Tech to be mere steps away from the holy grail of artificial general intelligence, more sober assessments argue that contemporary AI demonstrates 'the most limited snippet of intelligence'.[18] The 'common sense problem' within AI research is a longstanding one, with notable early failures including systems

'suggesting boiling a kidney to cure an infection, and attributing reddish spots on a Chevrolet to a case of the measles'. From the philosopher of science Brain Cantwell Smith's perspective, Good Old Fashioned AI (GOFAI)'s poor (and often comical) record on common sense is attributable to its misguided formal ontology which led not only to its misunderstanding of human cognition but also to its 'inadequate appreciation of the world's richness'(*Promise of Artificial Intelligence*, p37). AI's difficulties with common sense reasoning, however, persist in the machine learning age: One contemporary assessment wagers that 'top-of-the-line neural networks are less intelligent than a human toddler when it comes to flexibly handling a changing situation. A toddler can easily identify a dog, construct simple sentences and figure out how to use an iPad. Ask any single AI to perform all three tasks, and the algorithm – if not explicitly trained on all three – fails' (*Will AI Replace Us?*, p86). Moreover, while ChatGPT-3, a large language model with chat-bot functionality released by Open AI in November 2022, generates seemingly rich and lucid responses to queries spanning vast domains of knowledge, it also has a tendency to confidently provide inaccurate, made-up, or nonsensical information. This is why Meta's Chief AI Scientist, the NYU Professor Yan LeCun, refers to common sense as the 'dark matter' of contemporary AI.[19]

What both GOFAI and machine learning systems are interpreted as lacking, as gestured to above, is 'a basic ability to perceive, understand, and judge in a manner that is shared by (i.e. common to) nearly all people'.[20] Understood as effective judgement concerning everyday matters, common sense is, like intuition, often framed as more embodied and immediate than rational deliberation, and as closely linked to 'our pragmatic engagement with the physical world'.[21] For Aristotle, common sense entailed how the five senses come together to allow perceptual discrimination of objects in humans and other animals. Contemporary invocations

of common sense foreground everyday wisdom, shared rules of thumb, or elemental 'laws' of the world,[22] yet vestiges of Aristotle's formulation persist in how common sense is associated with both 'the sensible' (what is logical or reasonable) and the 'sensable' (what is obvious or perceptible to the senses). While common sense may be imparted by explicit instruction or carried via popular aphorisms (*Common-sense Neoliberalism*), it is formed primarily through situated experience, observation, trial and error, and other everyday forms of experimentation. In more explicitly affective terms, common sense is what 'feels' intuitively right, it is what aligns with gut feeling – connections underlined by the OED definition of 'counter-intuitive' as what is 'counter to intuitive or common sense expectation'. It is in this way that ideological assumptions and worldviews can become felt and materialised *as natural* – processes which, in this section, percolate beneath the surface and, in the following section, assume centre stage.

Efforts to address the common sense problem within first wave AI focused on designing intelligent programmes which could learn to abstract and generalise through propositional reasoning. In his pivotal late 1950s intervention, 'Programmes with Common Sense', the mathematician John McCarthy outlined a speculative machine learning programme to be co-designed with the computer scientist Martin Minsky called 'the advice taker', which would improve its behaviour solely on the basis of statements made to it about its 'symbolic environment and what is wanted from it'. A programme will be deemed to have common sense, he declared, 'if it automatically deduces for itself a sufficiently wide class of immediate consequences of anything it is told and what it already knows' (*Programs with Common Sense*, p4, p2). McCarthy's computational engagements with common sense reasoning resonated with other AI research at the time, including that of Alan Newell and Herbert Simon, who announced in 1958 that 'intuition, insight, and learning are no longer the

exclusive possessions of human beings and any large high-speed computer can be programmed to exhibit them' (*Mind Over Machine*, p3). Common sense and intuition converge here in involving implicit knowledge which must, it was assumed, be made explicit to enable greater machine intelligence.

GOFAI's trials and tribulations with respect to translating tacit human ways of knowing into machine-readable knowledge are perhaps best encapsulated by the Cyc project. Launched by computer scientist Doug Lenat and colleagues at MCC in 1984, Cyc aimed to build on the work of McCarthy (an advisor on the project), Minsky and others which had pinpointed early AI systems' limited capacity for sound everyday judgement as what made them 'brittle'; that is, unable to expand beyond the intentions of their designers to respond flexibly to uncertainty and change.[23] The Cyc project's basic methods involved encoding in machine-readable terms 99 per cent of a one-volume American desk encyclopaedia, and then identifying and encoding all of the common sense 'facts' (e.g. that an object can't be in two places at once) the creators of the encyclopaedia 'presumed the reader already knew' (*Cyc*, p76). This design, the team hoped, would enable the system to infer further rules directly from ordinary language and eventually enhance automated expert systems, which, in the 1980s, were expected to replace aspects of human decision-marking across a range of professional realms.

With only a fraction of its worldly concepts and rules encoded, Cyc could make inferences outside the scope of less complex systems. It could, for example, 'infer "Garcia is wet" from the statement "Garcia is finishing a marathon run", by employing its rules that running a marathon entails high exertion, that people sweat at high levels of exertion, and that when something sweats it is wet'.[24] Through mobilising higher-order logic, that is, Cyc could begin

to abstract, generalise and learn from its own experience. In 1995, ownership of Cyc was transferred to Cycorp, a spinoff company launched by Lenat (who remained its CEO until his death in August 2023), and the system has, over the past three decades, informed professional and logistical operations across government, industry, business, law and healthcare. Framed as a forerunner to IBM's Watson supercomputer, which in 2011 famously beat two reigning human champions on *Jeopardy*,[25] Cyc influenced the emergence of other AI common sense reasoning projects, including, most notably, Open Mind Common Sense (OMCS), set up by Minsky, Push Singh and Catherine Havasi at MIT Media Lab in 1999 (and active until 2016).[26] There was a brief historical moment at the end of the twentieth century, then, in which AI's common sense problem appeared to be well on its way to being solved.

As Cyc expanded, however, it encountered significant limitations related to the endless volume of human labour and encoded data required to produce viable results, alongside the system's inability to evolve on its own. The infeasibility of searching Cyc automatically for information relevant to a given problem in a realistic amount of time also fuelled the growing belief among critics that symbolic processing AI would never produce genuinely intelligent or intuitive systems.[27] The rise of second wave AI in the new millennium would only reinforce such convictions, given that machine learning algorithms could cull statistical patterns out of vast quantities of data in an instant, without the need for anywhere near the person-hours demanded by logic-based systems. Far less reliant on human knowledge and programming, deep learning architectures can also elaborate 'visual information that humans cannot even receive or perceive' and construct 'representations that are more relevant than those that any human computer could have identified'.[28]

Today, Cyc is marketed as an advanced, logic-based AI system which, unlike the nonhuman statistical reasoning of machine learning, employs 'human-like cognitive processes' in ways that are both transparent and explainable.[29] MIT Media Lab's OMCS project also framed its mission in 'human-centred' terms, though it wagered that AI's common sense problem might 'be solved by harnessing the knowledge of people on the Internet'.[30] Common sense and intuition are again closely linked here, with the wide-ranging, popularly-sourced, and computationally-usable knowledge offered by OMCS depicted as what would enable AI systems to make intuitive decisions with increased speed and accuracy (*Digital Intuition*) – a connection formalised in MIT's 'Digital Intuition' offshoot project, which Havasi led at Media Lab from 2011 to 2013.[31] Differently to Cyc, OMCS mobilised machine learning techniques in Natural Language Processing to build a language-based (as opposed to logic- or rules-based) system, which drew on external data to 'infer additional pieces of common sense knowledge' not already part of its data base. This design, its creators claimed, offered 'a distributed approach to the problem of common sense knowledge acquisition' which enabled OMCS's applications to 'achieve "digital intuition" about their own data'– to, that is, make inferences over multiple sources of data simultaneously, taking advantage of the overlaps between them (*Digital Intuition*, p25). Artificial intuition here, then, is depicted as simulating tacit human intelligence via algorithmic pattern recognition which identifies possible associations, correlations and influences emerging out of vast and varied data sets.

And yet neither symbolic processing systems like Cyc, nor hybrid systems like OMCS, nor state-of-the-art machine learning architectures have achieved anything close to human intuition, common sense and other forms of visceral and sensory knowledge. In seeking to simulate human common sense knowledge via computational means, first wave AI projects like Cyc and McCarthy's advice-taker wagered that precise, formal instruction could

substitute for situated and embodied modes of experimentation and navigation. GOFAI's pioneers believed, in other words, that when it comes to simulating human cognition, it is the *outcome* (i.e. accurate predictions and decision-making) rather than the (im)material processes and learning conditions that matters. In this vein, despite their human-centred rhetoric, MIT's Open Mind Common Sense and Digital Intuition projects were focused not on recreating intuitive modalities of learning, but rather on 'giving intuition' (apparently fully formed) to computers (*Digital Intuition Overview*), as if the possession of logically-organised, machine-readable information equated to human intuitive expertise and sense-making. Yet as computer science's struggles with formalising tacit human knowledge bring into relief, intuition may be powerful precisely to the extent that it *remains* implicit, incoherent and unarticulated. In turn, common sense's resistance to explication is what makes 'the practices it teaches significantly inaccessible'[32] – and therefore not easily (if ever) replicated by artificial means.

What is also at stake in these histories is the ability of AI researchers and systems to address the affective and sensory elements of both intuition and common sense – and their entanglements with immanent social and political relations. For Bergson, intuition is a way of knowing that combines cognitive and sensory 'data' to connect with experience as it unfolds (*Introduction to Metaphysics*). Given that both we and the objects we encounter are never static but rather always moving and becoming, Bergsonian intuition is primarily about the affective experience of duration, process and change. The media scholar Kara Keeling, in turn, draws on Bergson's philosophy to develop a conceptualisation of common sense in which 'shared conceptions of the world are inseparable from sensory-motor functions'.[33] In these understandings, common sense is never merely a cognitive operation – affect, sensation and embodied habituation are vital to its dynamics, to the ways in which common sense

shapes and is shaped by situated modes of attention, perception and interaction. Thus, when Cycorp claims that Cyc's 'human-like' cognitive skills mean that it 'understands (represents fully) real world contextual nuance that other AI can't, like culture, emotions, time, space, beliefs and bias',[34] the significance of the words 'cognitive' and 'represents' is crucial. What Cyc and other symbolic processing systems offer is a logic-based account of cognitive elements of 'emotion' amenable to computational representation. Whatever cannot be made legible in precise machine-readable instructions, codes and categories lies outside the scope of the system – while nonetheless haunting its propositional claims and closures. As such, to 'codify common sense' may be precisely to elide its affective elements, as immanent embodied and sensorial processes are reframed as schematic cognitive ones – a project aligned not only with the mid twentieth-century agenda of cognitive science,[35] but also with cybernetics' longstanding imperative to render diverse and unwieldy phenomena 'as forms of code'.[36]

The inability of symbolic processing AI to ever achieve the kind of embodied knowledge, affective attunement, or situated awareness central to human life may now seem obvious, but as the STS scholar Lucy Suchman and others have argued, even purportedly more 'embodied', 'enactive' and 'evolutionary' approaches bear traces of GOFAI's ontological and epistemological limitations. For example, while Google's 'Replicant' project committed to producing a general-purpose robot that could provide home-based care for older adults by 2020, domestic environments, and the practical labour they involve, entail a 'level of contingency' and embodied flexibility that has so far thwarted attempts at effective automation (*Demystifying the Intelligent Machine*, p49). Computer science research on machine learning's capacity to learn and mobilise knowledge concerning the basic physical 'laws' of the world, moreover, suggests that 'recent advances in AI have yet to yield a system

that displays an understanding of intuitive physics comparable to that of even very young children' (*Intuitive Physics*, p1257). Second wave AI's persistent inability to engineer everyday common sense might thus be interpreted as a significant glitch in any narrative of a discrete break between GOFAI and machine learning – a stark exposure of the fallacy of Big Tech claims to sentient machine life.

To explore this proposition further, first wave AI's epistemological assumption 'that the world comes chopped up into neat, ontologically discrete objects' limited early systems' ability to engage with how everyday intuitive intelligence emerges from 'a horizon of ineffable knowledge and sense-making' (*Promise of Artificial Intelligence*, p28, p27). By contrast, as Cantwell Smith notes, second wave AI can 'track correlations and identify patterns in massive statistical detail, without having to force-fit those patterns of relation into a small number of conceptual forms' (*Promise of Artificial Intelligence*, p59). This enables contemporary machine learning architectures to attend to rich 'sub-conceptual terrain' while remaining robust in the face of noise, ambiguity, and change (*Promise of Artificial Intelligence*, pp57-8). It might be argued, from this perspective, that current generations of AI approximate something akin to Bergsonian intuition: an immanent engagement with material life that inhabits the 'continuous flux' beneath the 'sharply cut crystals' of representational thought (*Introduction to Metaphysics*, p3). And yet, what both first and second wave AI lack, I want to argue, is a genuine ability to *learn affectively* – a capacity, that is, for tacit, experimental, sensory-oriented learning in which particular implicit qualities may never become explicit. The 'learning' in 'machine learning' refers, rather, to algorithmic processes of recursion in which the outcomes of previous actions are taken as inputs for future action, which allows a given program to recognise new items not part of its original training data. Unable to generate modalities of common sense that synthesise deep entanglements of

cognitive, sensory-motor and socio-cultural processes along the lines that Bergson and Keeling describe, machine learning systems compensate by substituting probabilistic correlations for relational processes of affecting and being affected.

Relatedly, we can consider how generative AI is framed by corporate actors and within the technology trade press as mobilising 'gut feeling' in ways that 'mimic human intuition'.[37] Similar to the 'seasoned detective who can enter a crime scene and know right away something doesn't seem right', generative machine learning algorithms, it is claimed, identify 'correlations and anomalies between data points' to discover 'unknown unknowns' (*Fourth Generation of AI*). As I have suggested, such portrayals frame artificial intuition as aligned with Peircian abductive reasoning; a process of forming explanatory hypotheses amid uncertainty. Similar, it might be suggested, to how Peirce describes abduction as a speculative mode of thinking with 'maybes' which generates 'momentary truths' (*Abduction*, p2), generative AI operations constitute an unfolding 'speculative experiment' in which 'data inputs and the algorithm mutually modify to optimize the output' (*Cloud Ethics*, p48). Importantly, however, for Peirce, abduction (not unlike Bergsonian intuition) is essentially a human-oriented process premised on affective intensities and relations. It is a multi-modal mode of discovery in which what is most important is not necessarily the data itself but rather subjects' sensorial reactions: abduction is initiated by 'the feeling of puzzlement and ends at the satisfaction of knowing' (*Abduction*; *Abductive Inference*). As an intuitive (yet also logical) mode of inhabiting conceivable possibilities, Peircian abduction thus explicitly departs from probability-based modes of inference, including those which generate shifting common sense 'truths' as the outcome of 'aggregate feeling tone[s]'.[38] Together, the points discussed above prompt us to ask what meaningful (processual, multi-dimensional, non-

reductive) affective learning and abductive experimentation would (or even could) look like in intelligent systems.[39]

In the tradition of the philosopher Hubert Dreyfus's founding critiques of AI,[40] the obvious question such dynamics beg is whether artificial intuition can ever actually be *intuitive* if it lacks the situated, embodied and affective common sense central to human intelligence. Given, however, that contemporary machine learning architectures give rise to distributed and relational modes of intuition premised on human-algorithm entanglements, the point is not, in my view, to negate the possibility of synthetic common sense by reiterating that machines 'lack feelings'[41] or that they 'are not made of the right kind of materials'.[42] Rather, what is at stake now is how varied AI systems are radically (re)constituting the intelligible and the sensible – dynamics which return us to Aristotle's ancient philosophy of common sense. If Aristotle was concerned with how the five senses combine to enable perception of particular objects across human and animal life, it is clear that the more-than-human attunement, perception and cognition enabled by algorithmic architectures are transforming what can be made perceptible to the senses, as well as the range of entities understood to participate in such cognitive-sensorial agencies (*The Datalogical Turn*; *Cloud Ethics*). While 'the human' cannot be excised from conversations concerning digitally-mediated intuition, we do, as the media psychology scholar Lisa Blackman contends, 'need radically revised notions of body-world-consciousness' which are 'compatible with twenty-first century media'.[43] What also requires further examination, I will argue, are the socio-political imaginaries collaborative practices of sensing, intuiting and speculating index and animate – as well as the pervasive, ideologically-imbued modes of common sense they (re)produce, which the remainder of the paper aims to unfold.

## Programming Ideology

Across first and second wave AI research, common sense has been widely understood as a neutral or apolitical mode of knowledge and reasoning to be achieved computationally through ever greater precision. Common sense, in this view, involves physical, biological, psychological, or economic 'truths' about 'how the world works', that must either be programmed into automated systems or immanently generated by training machine learning programmes with relevant data sets. Yet, as a range of critical thinkers have argued, common sense is far from impartial or neatly extractable from ideological worldviews – and the belief that the knowledge it gives rise to is simply factual, true, or natural is exactly what has to be *made real* via ongoing affective and socio-political practices rooted in structural relations of power. When understood more critically and expansively, then, common sense entails an array of messier (infra)structural relations, which underscore that the question of 'how the world works' is political and ideological as much as ontological and physical.

As noted earlier, a key source for theorising the politics of common sense is Antonio Gramsci. Writing in his *Prison Notebooks*, Gramsci suggests that the inherited common sense of the Italian peasantry, which functioned to make their subordination seem 'inevitable', 'inescapable' and/or 'the will of God or the law of nature', is crucial in explaining why the kind of socialist revolution envisioned by Marx had yet to occur in Italy.[44] Common sense, from this perspective, embodies how 'the realities of power bring into being cultures of subordination' (*Gramsci's Concept*, p255) and is thus often, as Gramsci puts it, 'crudely neophobe and conservative' (*Prison Notebooks*, p423).

Nearly a century later, Stuart Hall develops Gramsci's analysis to explore how, in the UK (and far beyond), neoliberal ideology has transformed common sense such that 'the broadly egalitarian and collectivist attitudes that underpinned the welfare state era are giving way to a more competitive, individualist, market-driven, entrepreneurial, profit-oriented outlook'. Drawing out Margaret Thatcher's political legacy, this brand of common sense knowledge operates as 'a cover-up for savaging the public sector in line with the dominant neoliberal, anti-state ideology' *Common-sense Neoliberalism*, pp55-6).

Charting the legacy of this rhetoric in current political projects in the UK, the cultural theorist Sara Ahmed examines how conservative ideology actively transforms common sense to materialise right-wing nationalisms animated by capitalist and neocolonial interests. The 'Common Sense Group', a lobby group established in 2020 by the Tory MP John Hayes, for instance, aims 'to reclaim Britain, defined in terms of the people's will, the common good, and the national interest from the hands of those deemed extremists', including Black Lives Matter, Extinction Rebellion and Kill the Bill, who are 'named on their website as "subversives fuelled by ignorance and an arrogant determination to erase the past and dictate the future"'.[45] As per Gramsci's and Hall's analyses, common sense is invoked here as 'a product of nature rather than history' and therefore 'outside time' (*Common-sense Neoliberalism*, pp53-4) – dynamics which position concerns for social, racial and environmental justice as dangerous 'fads' which distort reality and threaten the national character, while implying an equivalence between (normative) whiteness and common sense rationality. As this example suggests, conservative and neoliberal common sense are intimately entangled with racial, neo-imperial and settler colonial common sense (*Black Nationalism*; *Witch's Flight*; *Knowing Otherwise*) – and when everyday ways of knowing are colonised by exclusionary right-wing logics, common sense and ideology appear to mirror

one another, obscuring the more expansive affective ambiguities and possibilities of 'the ordinary'.

With these critical interventions in mind, we can return to Cyc to highlight some of the guiding ideological orientations of its own common sense project. Cyc's founding organisation, MCC, a Texas-based consortium of American computer, semiconductor, and electronics manufacturers, was established as a result of the USA Government's National Cooperative Research Act of 1984, unprecedented legislation which allowed American companies to 'collude' on strategic, long-term research. The Act was passed in response to the 'threat' to American interests understood to be posed by Japan's rapidly growing 'Firth Generation' AI project alongside Russian interest in future-generation computers.[46] This inaugurated a new period of transnational AI prosperity, marked in the USA by major defence department investment to develop AI-enabled cars, tanks and other military technologies (*Will AI Replace Us?*). The birth of Cyc, framed by its creators as similar to the Manhattan Project (which produced the world's first nuclear weapons), is closely bound up with this pulsating network of imperial-capitalist relations, Cold War anxieties, superpower antagonisms and military-intelligence, industrial-complex interests – dynamics crystallised in the appointment of Bobby Ray Inman, a former NSA Director and Central Intelligence Agency deputy director, as MCC's first President and CEO. [47] Today, under the auspices of Cycorp, Cyc remains a profit-oriented endeavour: while some of Cyc's content and reasoning mechanisms are publicly available, the system's inference engine code and its 'full list of 1000+ higher logic modules' is Cycorp proprietary. How, then, can we interpret Cyc's imperative to codify human common sense against this politically-charged background? What is at stake affectively, ideologically and ethically in creating a new ontology of worldly knowledge within such global conditions?

In their early vision of how Cyc would need to be built, Lenat and colleagues articulate their task in quite extraordinary terms: '[w]e must encode all the world's knowledge, down to some level of detail; there is no way to finesse this'. As if to acknowledge the audacity of their mission, they then quip: 'Fifteenth century explorers couldn't discover new lands without long voyages' (*Cyc*, p75). Within affective atmospheres animated by America's intensifying struggle for global technoscientific and geopolitical supremacy in the 1980s, this metaphor of European 'discovery' and expansion is telling. Invoking settler colonial legacies of violent conquest and indigenous dispossession to frame Cyc's ambition to translate the entirety of human knowledge into machine-readable terms aptly (if unintentionally) discloses the project's planetary designs on ontological and epistemological mastery. Underlying this endeavour are the assumptions that common sense is perceptible, timeless, and 'there for the taking' (*Common-sense Neoliberalism*), and that knowledge, more generally, is discrete, universal and unsituated; it can be extracted, spliced and recombined without substantive implications for meaning, truth, or ethics – a guiding ethos of AI expansionism layered on top of long histories of colonial domination and appropriation.

Within the Cyc project, common sense entails 'the fundamental rules of thumb about "how the world works" that people typically take for granted' (*Technology Overview*, p6). The purpose of rules of thumb, heuristics and analogies is to increase efficiency by managing complexity – a point, I would note, that resonates with post-war accounts of intuition as a honed capacity for pattern-recognition enabling fast-paced, 'arational' decision-making on the part of human experts (*Man over Machine*).[48] Yet as critical AI scholars have shown, epistemological shortcuts in machine intelligence are frequently informed by (and work to consolidate) social norms, stereotypes and prejudices – they are, in the digital media scholar

Safyia Umoja Noble's words, how discrimination is 'embedded into computer code and, increasingly, in artificial intelligence technologies'.[49] In everyday life, common sense is, as Gramsci puts it, 'strangely composite' (*Prison Notebooks*): it condenses, without resolving, the contradictions among, 'well-tried knowledge, customary beliefs, wise sayings, popular nostrums and prejudices' (*Common-sense Neoliberalism*, p53). Within AI systems, these affectively laden contradictions and complexities must ultimately be reduced to numbers, statistical percentages and binary terms – processes of computational translation which can at once conceal, naturalise and amplify 'social inequalities under the guise of technical neutrality'.[50]

Although Lenat and colleagues figure common sense knowledge as relating mainly to the laws of 'everyday physics', they suggest that it also extends to 'humans interacting – and developing – socially, culturally, politically, militarily, economically, scientifically' (*Cyc,* p75). While this acknowledgement might have yielded further reflection on the inherent messiness – and deep ethical stakes – of their endeavour, Lenat et al. instead move to reassure their readers and stakeholders (and perhaps themselves) that most of the implicit knowledge they need to make explicit is 'declarative' and ultimately linked to 'factual knowledge' (*Cyc,* p81). And if knowledge is declarative and factual it can, they assume, be approached as discrete and modular. We might thus link the Cyc project's philosophy to what the media scholar Tara McPherson, in her account of the enfolding of 'racial organizing principles' into digital computing systems in the USA after World War Two, calls 'lenticular logic': a 'logic of the fragment of chunk, a way of seeing the world as discrete modes or nodes, a node that supresses relation and context'.[51]

It is significant, in this vein, that, in its pursuit of computational abstraction, generalisation and common sense, the Cyc project turned to an architecture premised on analogical reasoning. Drawing on work by Minsky[52] which suggested that humans 'assimilate new information by finding similar things we already know about and recording the exceptions to that analogy', the CYC team sought to 'swap the problem of "telling the system about x" for the problem of "finding an already known x that's similar to x"' (*Cyc*, p66). In other words, Cyc would solve problems and navigate new situations by drawing analogical links to what it already 'knows' – which would require that it be programmed with a substantial base of existing knowledge. In practical methodological terms, once the team had encoded 400 articles from their chosen encyclopaedia into the Cyc system, a group of research assistants were enlisted to enter 'the final 99 per cent of the knowledge base'. Each research assistant would 'take an article, locate the already-represented similar article(s), and preform a machine-assisted "copy & edit" procedure to produce a machine-understandable version of the new article'. An existing article on 'Pewter' might, for instance, be copied and edited to populate a new entry on 'Britannia-Metal' (*Cyc*, p77). It is clear that this approach saved valuable time, but what are the epistemological and ethical implications of enforcing a 'common semantics' in this way?

Drawing analogies between types of metal may not seem particularly contentious, yet the ideological interests at stake in machine-enabled analogical reasoning slide into relief when we consider other founding terms within Cyc's knowledge base – such as 'Ronald Regan', 'female animal', 'abortion', 'AIDS', 'homosexuality' and 'terrorist'. In a discussion about how the Cyc system would need to updated to keep pace with changing social phenomena and mores, for instance, Lenat et al refer to 'AIDS' as a 'new embarrassment' to be categorised alongside other 'embarrassing' sexually transmitted diseases such as 'herpes'

(*Cyc*, p71). Although framed as a brief aside, this comment – articulated at the height of the harrowing destruction of the AIDS crisis and the homophobic and racialised violence inherent in conservative political modes of governing it in the USA – discloses much about the ambient social norms and values likely to inform the organisation of knowledge within a corporately produced AI ontology of common sense knowledge in mid-1980s America. How can we understand the immanent entanglements of human values and power relations with the reductive functions of mathematical logic at play here? While the early Cyc literature touches briefly on what kind of 'light' practical training the project's research assistants might require for their 'copy & edit' task, there is scant discussion of what role the social positionalities, affective orientations and ideological worldviews of these 'knowledge enterers' – or indeed of the project's creators, designers and funders – might play in the system's ongoing production of common sense.

MIT's Open Mind Common Sense Project, which was funded by Microsoft, Schlumberger and Bank of America, also employed analogical reasoning, though its use of machine learning techniques and internet-sourced data distinguished its approach from Cyc's. The OMCS system combined a semantic network, ConceptNet, 'built from a corpus of knowledge collected and rated by volunteers on the Internet', with a reasoning engine, AnalogySpace, which 'used factor analysis, to build a space representing the large-scale patterns in common sense knowledge' (*Digital Intuition*, pp24-5) – a design, I want to argue, with significant implications for the production of common sense 'truths'. In Cyc's logic-based framework 'truth functions' can 'apply to one or more concepts and return either true or false' (*Cyc*), whereas in OMCS's distributed system truth emerges, in part, as the shifting effect of popular ratings. From 2007, internet volunteers were intermittently recruited to rate common sense statements from OMCS (i.e. user-verified assertations in ConceptNet and predictions made

by AnalogySpace) using the set 'generally true', 'sometimes true', 'not true', 'doesn't make sense' and 'not true but amusing' (*Digital Intuition*, p32) – data which was continuously fed back into the system to refine and expand its knowledge base. Through OMCS's mediating lens, then, the validity of common sense claims become a recursive function of algorithmically calibrated 'popularity'. Yet while Gramsci and Hall frame popular knowledge, values and rules of thumb as crucial sites of social and political struggle, popularity within machine learning systems is the unstable product of statistically adjudicated matters of fit that remain largely hidden from public view.

Moreover, if Peircean abduction is a speculative mode of thinking with 'the possible' which generates 'momentary truths' for the purpose of discovery, the statistically adjudicated modes of common sense emerging from these kinds of machine learning systems arguably limit rather than expand experimental possibilities for social life. As Havasi and colleagues explain, to work effectively with 'inconsistency, subjectivity and generally noisy data', OMCS sought to make 'rough conclusions' based on analogies, similarities and tendencies rather than on an 'assumption of absolute truth'. The system employed singular value decomposition (SVD), a technique in linear Algebra which compresses data by sharing information between items deemed similar to each other. This enabled 'a method of commonsense inference called *cumulative analogy* (*Digital Intuition*, p27). If a general risk of analogical reasoning is that it flattens complex relations and elides historical, cultural, affective and socio-political particularities[53], cumulative analogy arguably intensifies this risk because it seeks 'to moderate elements of the cultural field that may present themselves as typical or outstanding, so that they can be led to make sense relative to other, more even-keeled examples'[54] – dynamics indexing the wider historic links among statistics, machine learning, and the racialised, gendered, and classed constitution of 'normalized standards of

behaviour'.[55] Within machine learning ontologies of everyday knowledge produced by systems such as OMCS, then, both 'the sensible' and 'the sensable' are recursively ordered via a mix of popular ratings and computational approximations of fit. As these dynamics augment the likelihood that common sense 'truths' will align with dominant social norms and prejudices, they also narrow possibilities for public dialogue and contestation as technology corporations, engineers and algorithms are increasingly positioned as the arbiters of reason, value and intelligibility.

These socio-technical dynamics are closely linked to the guiding logics and procedures of intelligent architectures but also, of course, to the data which animates AI. The CYC project appears to have paid scant attention to the potential issues with approaching an American-produced desk encyclopaedia as a 'factual' source of data for populating a global ontology of common sense knowledge, yet these problems are arguably much greater in machine learning systems like OMCS given the massive volume of data such programmes require and the lack of any systematic way of addressing the origins of particular data or the logics employed to produce and organise them. This means, as Cantwell Smith notes, that if an AI system is trained on a database that has been tagged using human-oriented categories, then 'any subcategorical subtlety and traces of prejudicial nuance will in all likelihood have been lost, and the system is liable to fall, without "knowing" it, into derivative patterns of bias and prejudice' (*Promise of Artificial Intelligence*, pp64-5). Linking back to the previous section, then, although it may be claimed that machine learning architectures engage intuitively with 'the world's richness' in ways wholly different from logic-based systems, what bears emphasising here is that both first wave and second wave AI systems are fed with 'data that are already processed, and to that extent "postconceptual"'– a fact which clarifies why mainstream computer science's longstanding treatment of common sense as neutral,

apolitical and amenable to computational translation has worked precisely to enable exclusionary ideology, bias and prejudice to flourish within algorithmic ecologies.

All of this tells us more, I want to suggest, about the nature and implications of contemporary artificial intuition. The promise of machine learning-enabled prediction and pre-emption as articulated by Big Tech is not only that it can simulate human intuition along the lines of a seasoned detective or expert physician, but also that it can attune to emergent aspects of reality that *elude* human perception, cognition and sense-making. These touted anticipatory and speculative capacities are premised on the ability of neural networks to tease out latent factors and subtle behaviours from a dataset and 'pinpoint previously unidentified categories' (*Recommended for You*, p124). It is vital to appreciate, however, as Chun, Noble and others have shown, that the latent correlations drawn on within machine learning systems to 'intuit' human meanings, patterns and associations are often informed by proxies (e.g. for race, sexual orientation, political leanings etc) that 'amplify historical inequalities' (*Discriminating Data*, p41, 58). While Bergsonian intuition seeks to achieve precision through connecting with what is 'unique' in an object (*Introduction to Metaphysics*, p7) and Peirce frames abductive reasoning as 'the only logical operation that introduces any new idea' (*Collected Papers*), artificial intuition, from this perspective, often depends on 'correlations that lump people into categories based on their being "like" one another' in ways that exacerbate sedimented social hierarchies and antagonisms – computational dynamics evident to varying degrees in both the Cyc and OMCS projects (*Discriminating Data*, p159).

As computationally-mediated forms of common sense increasingly come to order our world(s) – to define and delimit the intelligible and the sensible – affect and ideology are thus operationally correlated and enmeshed in new ways. To claim that ideology is *correlational*

within contemporary media cultures is to highlight how, as machine learning becomes ever more integral to everyday social environments and infrastructures, the elemental resources available for developing new common sense(s) are increasingly ordered by algorithmic operations which extend capitalist imperatives, amplify social inequalities and reify normative accounts of the 'how the world works'. In broad terms, the techno-social risk of such processes is that we continue to produce AI systems that establish data-driven 'hunches' on the basis of iterative biases, stereotypes and prejudices projected into future and, in turn, cultivate human subjectivities infiltrated by profit-oriented algorithmic logics that naturalise conservative ideologies as felt truth. Though, as I have suggested elsewhere, an analysis of algorithmically-mediated intuition that engages both the indeterminacy of machine learning recursion and the messiness of lived experience must account for how cognitive-sensory capacities are immanently trained in multiple ways with diverse, and often contradictory, affective, material, and socio-political effects (*Intuition as a 'Trained Thing'*).

**Counter-intuitive AI?**

To the extent that intuition and common sense have become entangled in transatlantic histories of AI in ways that have flattened complex affective and socio-political relations, amplified right-wing ideology, and restricted what Bergson called 'radical novelty' (*The Creative Mind*), this article concludes by asking what different potentialities for human-machine relations might be opened by foregrounding the counter-intuitive. If common sense is what *feels* intuitively right, and if what feels right is frequently bound up with questions of power, value and normativity, what might it mean, that is, to conceptualise and design counter-intuitive AI? And, in turn, if common sense is also much more than ideology, if it pulses with unfolding possibilities of everyday affect, knowledge and experience, how might

pursuing what registers as counter-intuitive enable us to access and cultivate the sensory-social potential of that which exceeds intelligibility or sense(i)ability within dominant computational infrastructures and ecologies?

As touched on earlier, the counter-intuitive is defined as what is 'opposed to or not what would be expected intuitively' and thus 'apparently improbable' (OED). In affective terms, we call something counter-intuitive when it *feels* 'wrong' but ultimately is not. If intuition is about being led by our senses, the counter-intuitive frustrates or swerves away from gut feelings, hunches, or what seems automatically 'right'. It is the unnerving experience of our senses, in their trained alignment with dominant modes of common sense as ideology, potentially leading us astray – and it therefore compels us to pause, reflect and possibly persist in a course of action that may feel illogical, uncomfortable, or risky. The counter-intuitive, then, is not smoothly reproductive of common sense normativities but rather entails friction – a hesitation that compels us to inhabit, if only fleetingly, the teeming convolutions and possibilities of common sense.

Post-Gramscian accounts have generally figured common sense's composite and unfinished qualities as what make it a crucial site for political struggle and transformation. For Stuart Hall and Alan O'Shea, common sense 'contains Stone Age elements and principles of advanced science, prejudices from all past phrases of history… and intuitions of a future philosophy' (*Common-sense Neoliberalism*, p53). Here, I want to suggest, we can glimpse a different relationship between common sense and intuition than that foregrounded in the post-war histories of AI that I have animated. Within GOFAI projects like Cyc, common sense knowledge exists objectively 'out there' and must be made computationally readable to render AI systems more intuitive. Via the artificial intuition enabled by contemporary

machine learning architectures, in turn, everyday experience is mined, extracted and classified to make it amenable to capital; better able, that is, to predict and pre-empt future attributes. Whereas in post-Gramscian genealogies of critical theory it is through intuitively inhabiting inconsistencies, paradoxes and anxieties woven through common sense that we might connect with other potentialities immanent in its everyday dynamics – with the collective aim of harnessing an 'existing sense of unfairness and injustice' to build 'an alternative consensus or "popular philosophy"' (*Common-sense Neoliberalism*, pp65-6).

These traces of potentiality for thinking and feeling otherwise lodged within common sense are what Gramsci terms 'good sense'. Such kernels of resistance express everyday wisdom concerning 'how the world works' *inequitably*, such as the conviction that 'landlords exploit tenants' or that 'banks responsible for the credit crunch expect to be bailed out by taxpayers rather than take the crunch themselves' (*Common-sense Neoliberalism*, p54). For Gramsci, solidarities between intellectuals and those most subordinated within class hierarchies must be cultivated to make this 'healthy nucleus' of common sense more coherent and develop a 'historic block' for radical change (*Prison Notebooks*). Affect is, I want to emphasise, a crucial catalyst here: the raw oppression experienced by the subordinated – what Gramsci calls 'feeling-passion' – must be translated into 'new, genuinely counter-hegemonic narratives' (*Gramsci's Concept*, p283). Affect, then, both discloses and accelerates the possibility of radical change, but if more inclusive and equitable socio-political futures are to be actualised it must be appropriately routed, refined and rationalised.

Yet it is here, I want to argue, that a counter-intuitive politics and philosophy of AI may need to part ways with Gramsci's lineage. As the part of common sense that signals reason rather than 'blind emotion' (*Gramsci's Concept*, p283), good sense, for Gramsci, is what must be

isolated and made 'ideologically coherent' (*Prison Notebooks*, p421). In this formulation, affirmative transformation emerges from channelling unruly affect into compliant reason, from translating the entropic intensities of 'the multitude' into an ideological order amenable for strategic mobilisation. This is, however, in a sense, what machine learning systems currently do with visceral human experience via processes of computational translation and ordering – albeit in ways that seem to elide any 'organic' social dialogue or channels for solidarity-building. Algorithmic functions of recognition and reduction, in this view, are precisely what diminish somatic and socio-political dynamism and difference by making entities intelligible within computational ecologies only to the extent that they accord with logics which have long been shaped by cybernetics, cognitive science and imperial-capitalist interests. What might characterise a counter-intuitive approach to AI is thus not the imperative to encode chaotic affect into a smooth plane of reason, but rather collaborative efforts to retrieve and reactivate the messy remainder which has resisted translation into computational form – to intuitively inhabit the affective-political singularities, complexities and ambivalences which haunt the purportedly neutral and logical contours of both common sense and intelligent systems.

By way of illustration, we can consider Hall and O'Shea's discussion of how opinion polls are interpreted by both the media and the wider public as 'objective fixities, as an indisputable tide against which politicians turn at their peril – rather than as yes/no answers to questions framed from within the dominant agenda of the moment'. Yet if the political Left is to build an effective counter-politics at the level of common sense, they insist, we must appreciate that polls 'are a tool in the struggle over common sense, rather than an objective reaction to it' (*Common-sense Neoliberalism*, p60). Polls, that is, can be opened up, questions can be asked in ways that get at the complexity, ambiguity and potential beneath the 'yes' or

'no'. What might it mean, then, to ask similar questions about logic, code and algorithms? Digital media operate, by definition, in binary terms, yet at stake here is the counter-intuitive imperative to imagine how it might be possible to sense, think and speculate beyond the binary and the scalar, beyond nodes and edges, beyond surface correlations and hidden layers to glimpse and reconnect with the unfolding multiplicities, relationalities and possibilities which exceed normative epistemic shortcuts and lenticular logics within AI research and systems. How, then, might the affective 'surplus' which evades computationally-ordered common sense be felt, as Keeling puts it, 'like an intuition or premonition, something unseen, but nonetheless present(ly) (im)possible' (*The Witch's Flight*, p6)?

Inhabiting computationally ordered common sense as site of political transformation would, I want to suggest, entail what the political geographer Louise Amoore calls a 'situated struggle for alternative routes that are foreclosed in the calculation of an output' (*Cloud Ethics*, p171) – but also wider socio-affective praxis oriented towards re-making ontologies of difference, commonality and correlation in machine learning. Importantly, this is a speculative project aided by a counter-intuitive temporality wherein the past is, as Chun puts it, not fixed or 'lost' but rather 'a space of potential' (*Discriminating Data*, p244). Dwelling within these unfinished histories of human-machine relations, we might, for instance, seek to imaginatively trace how Cyc's ontology of common sense knowledge could have materialised differently had its creators privileged affective relations over cognitive propositions, situated knowledge over epistemological mastery, and transversal ethics over analogical reasoning – or, in turn, if the system had been populated by data not from an American desk encyclopaedia but rather from a dataset curated with attention to multivalent difference, decolonial relationality and displacement of whiteness as norm. What different conditions of the intelligible or the sensible might have emerged from pursuing such alternate

routes? What alternative intuitions concerning 'how the world works' could have been cultivated? And what affective traces of these 'forks in the road not taken' in late twentieth century AI persist today?

An approach which seeks to cultivate new presents and futures for AI imaginaries and systems by speculatively dwelling within 'moments of nonclosure' within genealogies of intelligent systems runs counter to the accepted logics of many computer scientists, who may see 'the past' as immutable history and, in relation to neural networks in particular, insist that 'the adjustment of weights within hidden layers is an impenetrable process that retains its opacity even to those who undertake it' (*Cloud Ethics*, p158, pp162-3). From the perspective of leading AI designers, engineers and stakeholders, such imaginative techno-social praxis may feel counterintuitive in terms of seeming uncomfortable, pointless, or 'wrong'. Indeed, for Cyc to have taken shape along the more affirmative lines outlined above would arguably have required the existence of a wholly other social world – animated by a very different economic, socio-political and epistemological order and systems of valuing and funding scientific and technological innovation. Yet what collectively persisting in such counter-intuitive modes of conceptualisation and experimentation might nonetheless produce, I want to suggest, is a generative pause, glitch, or moment of friction in the pervasive computational reproduction of ideology as common sense – creating a speculative Peircian aperture to consider how counter and subaltern common senses that have survived 'attempts to incorporate them into dominant regimes of knowledge' might be mobilised to craft 'alternative[s] to existing power relations' (*The Witch's Flight*, p7).

Disrupting the presumed inevitability of dominant ideological mediations of human and planetary life as they play out in pervasive profit-oriented machine learning systems feels

particularly urgent at present given how the worldviews of Silicon Valley tech elites are actively coalescing with right-leaning political movements built on racist foundations to 'advance an illiberal agenda and authoritarian tendencies'.[56] Moreover, and crucially, when a leading figure at the junction of computer science and Big Tech like Yann LeCun frames common sense as the 'dark matter' of contemporary AI (*Autonomous Machine Intelligence*), he is also advocating for a re-opening of post-war histories of digital computing to reinvigorate the undetonated potential of certain elements of GOFAI in conjunction with emergent machine learning technologies. My argument is that it matters greatly *how*, and with what epistemological and political aims and sensibilities, such histories are reanimated – which, I suggest, makes the kind of speculative genealogical analysis this article has offered, alongside related critical work across affect studies, digital media scholarship, and critical AI studies, of pragmatic political urgency. While Silicon Valley may have no interest in addressing normativity, and computer science is largely an instrumentalist field, diverse coalitions of practitioners, designers, scholars, activists, artists and policy makers are emerging with an interest in re-making AI imaginaries, logics and systems in more experimental, equitable and ethical ways; a collective undertaking which involves imagining how post-war trajectories of AI could have, and could still, materialise(d) otherwise.

Cultivating a counter-intuitive approach to AI in such conditions requires imaginative and interdisciplinary re-thinking of logic, design, engineering, coding, tagging data and algorithmic weightings, but also wider socio-technical and affective-political forms of participation, contestation and speculation that push against the boundaries of extractive logic, corporate propriety and conservative normativity to remediate existing links among AI, intuition and common sense. The counter-intuitive call to introduce friction into the flow of

everyday intuitions, hunches and gut feelings I have outlined here is not an injunction to counter affective automaticities with rational thought, nor does it assume that deeply sedimented human-machine entanglements could be magically reversed. Rather, it extends an invitation to inhabit more deeply contemporary assemblages of affect, ideology and technology so as to grapple with the intensive regimes of sensorial training and colonisation in which we (human and non-human) are differentially embedded – and, ultimately, to attune to the richness and complexity of the world in ways that foreground 'the lived experiences of those who are disempowered, discriminated against, and harmed by AI systems' (*Atlas of AI*, p225).

To move with the ontopolitical affordances and challenges of twenty-first-century media, such efforts and coalitions must, I want to suggest, be attuned to the realities, challenges and possibilities of human-algorithm entanglements – and, perhaps, as Blackman puts it, to 'the importance of developing a distributed and mediated form of perception (many eyes and ears – human and non-human) in order to create the possibility of "seeing" what often remains foreclosed, disavowed, fugitive, and yet which seethes as an absent-presence' (*Haunted Data*, p58). From this angle, 'data analytics can enable us to engage in what discriminatory data foreclose' (*Discriminating Data*, p244), and computationally-ordered common sense remains a vital and generative site for political struggle, experimentation and change.

**Carolyn Pedwell** is Professor in Digital Media in the Sociology Department at Lancaster University and the author of three single-authored books including, most recently, *Revolutionary Routines: The Habits of Social Transformation* (McGill-Queens UP, 2021). She is also the co-editor (with Gregory J. Seigworth) of *The Affect Theory Reader 2: Worldings, Tensions, Futures* (Duke UP, 2023). Carolyn's current research, funded by a

British Academy Mid-Career Fellowship (2024-2025), is developing a post-war 'affective genealogy' of human-machine relations in Britain and North America oriented around shifting conceptualisations of intuition, with reference to 'artificial intuition'.

1. Wendy Hui Kyong Chun, *Discriminating Data: Correlation, Neighbourhoods, and the New Politics of Recognition*, MIT Press, 2021, p181. (Hereafter *Discriminating Data*.)

2. Literatures in computer science, AI and critical data studies refer to various 'waves' of AI, with some studies claiming three or four distinct waves. For the sake of clarity, and in alignment with my argument, I refer to two key waves in post-war, transatlantic AI research, corresponding broadly to 'logic-based' and 'machine learning' approaches – while acknowledging the diversity of techniques within these schematic approaches, as well as the ongoing overlaps and interconnections between them.

3. Hubert Dreyfus and Stuart Dreyfus, *Mind over Machine: The Power of Human Intuition and Expertise in the Era of the Computer*, The Free Press, 1988, p36. (Hereafter *Mind over Machine*.)

4. Henri Bergson, *An Introduction to Metaphysics*, T.E. Hulme (trans.), The Knickerbocker Press, 1912 [1903]. (Hereafter *Introduction to Metaphysics*.); Henri Bergson, *The Creative Mind*, M. L. Andison (trans.), Read Books Ltd, 1939. (Hereafter *The Creative Mind*.)

5. Brian Cantwell Smith, *The Promise of Artificial Intelligence: Reckoning and Judgement*, MIT Press, 2019, p20. (Hereafter *Promise of Artificial Intelligence*.)

6. John McCarthy, 'Programs with Common Sense', *Proceedings of the Teddington Conference on the Mechanization of Thought Processes*, Her Majesty's Stationary Office, pp75-91, 1959. (Hereafter *Programs with Common Sense*.); John McCarthy, 'Some Expert Systems Need Common Sense', *Annals of the New York Academy of Science*, 426, 1983,

pp129-37; D. Lenat, M. Prakash and M. Shepard, 'Cyc: Using Common Sense Knowledge to Overcome Brittleness sand Knowledge Acquisition Bottlenecks', *The AI Magazine*, 6:4, 1985, pp65-85. (Hereafter *Cyc*.)

7. Antonio Gramsci, *Selections from the Prison Notebooks*, Q. Hoare and G. Nowell Smith (eds), Lawrence and Wishart, 1971. (Hereafter *Prison Notebooks*.)

8. Lubiano Wahneema, 'Black Nationalism and Black Common Sense: Policing Ourselves and Others', in L. Wahneema (ed.), *The House that Race Built: Black Americans, U.S. Terrain*, Pantheon Books, 1997, p232. (Hereafter *Black Nationalism*.)

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