CONVERSATION ABOUT TECHNOLOGY

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Annotation:This text offers a philosophically dense, interdisciplinary examination of the contemporary discourse on technology, framing it as an unresolved tension between human augmentation and existential compression. It traces the externalization of cognition through large-scale AI systems—particularly transformer-based language models—which shift meaning-making from biological to statistical substrates, blurring syntax/semantics and simulation/understanding while mirroring predictive-coding theories in neuroscience. The analysis extends to the geological materiality of digital infrastructure, the convergence of biotech–nanotech–infotech that dissolves organism/artifact boundaries, and the temporal flattening induced by attention economies that privilege hyperstimulation over sustained reflection. It critiques surveillance capitalism's evolution into preemptive governance of possibility, contrasts it with open-source disruption and quantum threats to cryptography, and underscores biophysical energy ceilings that constrain computational scalability. Ultimately, the discourse emerges as constitutively aporetic: a site where modernity confronts its own reconstituted conditions of agency, freedom, and finitude amid planetary-scale rewiring of cognition, matter, energy, and time—without resolution into utopian or dystopian certainties.

Annotation:Данный текст представляет собой философски насыщенное, междисциплинарное исследование современного дискурса о технологиях, представляя его как неразрешимое напряжение между усилением человеческих возможностей и экзистенциальным сжатием. В нём прослеживается

экстернализация познания через крупномасштабные системы ИИ — в особенности трансформерные языковые модели, — которые переносят производство смысла с биологических на статистические субстраты. Этот процесс размывает границы между синтаксисом и семантикой, а также между симуляцией и подлинным пониманием, параллельно отражая теории предсказательного кодирования в нейронауке. Анализ распространяется на геологическую материальность цифровой инфраструктуры, конвергенцию биотехнологий, нанотехнологий и инфотехнологий, стирающую различия между организмом и артефактом, а также на временное сплющивание, вызванное экономиками внимания, отдающими предпочтение гиперстимуляции перед устойчивым размышлением. Критикуется эволюция капитализма слежки в превентивное управление возможностями поведения, противопоставляется это открытым исходным нарушениям и квантовым угрозам криптографии, подчёркиваются биофизические энергетические потолки, ограничивающие масштабируемость вычислений. В конечном итоге дискурс о технологиях предстаёт конститутивно апоретичным: пространством, где поздняя современность сталкивается с переконфигурированными условиями собственной агентности, свободы и конечности посреди планетарного переплетения познания, материи, энергии и времени — без разрешения в утопические или дистопические определённости.

Annotation: Ushbu matn texnologiya haqidagi zamonaviy diskursni falsafiy jihatdan zich va ko'p tarmoqli tahlil qiladi, uni inson qobiliyatlarini kuchaytirish va ekzistensial siqilish o'rtasidagi hal etilmagan ziddiyat sifatida ta'riflaydi. Unda katta miqyosli sun'iy intellekt tizimlari — xususan, transformer asosidagi til modellar — orqali idrokning tashqi qilinish jarayoni kuzatiladi; bu jarayon ma'no hosil qilishni biologik substratlardan statistik substratlarga o'tkazadi. Natijada sintaksis va semantika, simulyatsiya va haqiqiy tushunish chegaralari xiralashadi, shu bilan birga neyronauka nazariyalaridagi bashoratli kodlash mexanizmlarini aks ettiradi. Tahlil raqamli infratuzilmaning geologik moddiyligiga, biotexnologiya, nanotehnologiya va axborot texnologiyalarining birlashuviga — organizm va artefakt chegaralarini yo'qotuvchi jarayonga, shuningdek, diqqat iqtisodiyoti sababli

vaqtning tekislanishiga — giperstimulyatsiyani uzoq muddatli mulohazadan ustun qo'yuvchi holatga qaratilgan. Kuzatuv kapitalizmining imkoniyatlarni oldindan boshqaruvga aylanishi tanqid qilinadi, bu ochiq kod harakati va kvant hisoblashning kriptografiyaga tahdidlari bilan qiyoslanadi, hisoblashni yanada kengaytirishni cheklovchi biofizik energiya chegaralari ta'kidlanadi. Oxir-oqibat, texnologiya diskursi konstitutiv aporetik sifatida namoyon bo'ladi: zamonaviylik o'zining qayta shakllangan agentlik, erkinlik va nihoyatlik sharoitlari bilan to'qnashadigan maydon — idrok, modda, energiya va vaqtning sayyoraviy miqyosda qayta to'qilishi o'rtasida — utopik yoki distopik aniqliklarga yetmaydi.

Keyword: technology discourse, augmentation, compression, externalization, predictive coding, materiality, convergence, temporal flattening, surveillance capitalism, aporetic

Keyword: технологический дискурс, усиление, сжатие, экстернализация, предиктивное кодирование, материальность, конвергенция, временное сплющивание, капитализм слежки, апоретичность

Keyword: texnologik diskurs, kuchaytirish, siqilish, tashqi qilish, bashoratli kodlash, moddiylik, birlashuv, vaqt tekislanishi, kuzatuv kapitalizmi, aporetiklik

The contemporary discourse surrounding technology unfolds as a multilayered negotiation between augmentation and alienation, between epistemic expansion and ontological compression. At the core of this conversation lies the recognition that technological systems are no longer mere instruments but constitutive elements of human subjectivity itself. When we speak of artificial intelligence, we are no longer describing an external tool that performs calculations faster than the human mind; rather, we are articulating the progressive externalization of cognitive functions that were once considered the exclusive domain of biological intelligence. Large language models, transformer architectures, diffusion models, and reinforcement learning with human feedback represent not simply engineering achievements but a profound shift in the locus

of meaning-making. The statistical patterns distilled from petabytes of human textual production are now capable of simulating reasoning chains, stylistic imitation, ethical deliberation, and even self-referential awareness to a degree that forces us to revisit classical distinctions between syntax and semantics, between simulation and understanding. This blurring is not accidental. The very architecture of contemporary deep learning—built on backpropagation through layers of increasing abstraction—mirrors, in an inverted fashion, the hierarchical predictive coding hypothesized by neuroscientists such as Karl Friston and Andy Clark. The minimization of variational free energy in the brain finds an uncanny analogue in the minimization of cross-entropy loss during training. Both processes involve the constant updating of internal models to reduce surprise when confronted with sensory or textual data. Yet where biological prediction error minimization occurs within a metabolically constrained, embodied agent embedded in a physical niche, silicon-based prediction occurs within a disembodied, energetically profligate system whose only "niche" is the archive of digitized human culture. This asymmetry generates the central tension of the present technological conversation: we have created cognitive prostheses whose scale and speed outstrip our metabolic and phenomenological reality, yet whose semantic horizon remains entirely parasitic upon ours. Parallel to this cognitive externalization runs the material transformation of infrastructure. The cloud is not a metaphor; it is a planetary-scale apparatus of redundant data centers, submarine fiber-optic cables, rare-earth mineral extraction zones, cooling towers that consume freshwater at the scale of small cities, and an electricity demand projected to rival entire nation-states within the next decade. Every token generated by a frontier model represents embodied energy—kilowatt-hours drawn from hydroelectric dams in Québec, coal plants in Inner Mongolia, or natural-gas turbines in Texas—transduced through layers of silicon, copper, lithium, cobalt, and tantalum. The conversation about technology therefore cannot remain confined to epistemology or even ethics; it must become geological. We are witnessing the emergence of a technofossil stratum whose primary signal will be isotopic anomalies in carbon and nitrogen cycles, radioactive spikes from reactor byproducts, and persistent synthetic polymers interleaved with microprocessors in future sedimentary records. At the

same time, the accelerating convergence of biotechnology, nanotechnology, and information technology is dissolving older boundaries between the organic and the artefactual. CRISPR-based gene drives, synthetic biological circuits, DNA data storage, and brain-computer interfaces no longer represent separate research programs; they form an integrated frontier in which information is written into, read from, and rewritten across biological substrates. When Neuralink threads or Synchron stents record neuronal ensembles and decode them into cursor movements or spoken words, the boundary between thought and signal becomes porous. When organoids grown from induced pluripotent stem cells are coupled with multi-electrode arrays and trained via closed-loop stimulation to perform pattern recognition tasks, we enter a regime in which "intelligence" is no longer species-specific but substrate-agnostic. The philosophical stakes are immense: if mindedness can be instantiated in wetware, hardware, or hybrid architectures, then the anthropocentric prejudice that has structured Western metaphysics since Descartes collapses. Mind becomes a phase space phenomenon—an emergent attractor within sufficiently complex, recursively self-modeling information-processing systems—rather than a substance or a privilege of carbon-based life. Yet this expansion of the space of possible minds is accompanied by an equally dramatic contraction in the diversity of lived temporality. Algorithmic recommendation systems, attention economy platforms, and short-form video feeds operate by exploiting dopaminergic loops that evolved for intermittent foraging in savanna environments; they now deliver supernormal stimuli at megahertz frequencies. The result is not merely distraction but a temporal flattening in which the phenomenological present is compressed into micro-segments of perpetual anticipation and micro-reward. Long-form attention—the sustained, effortful traversal of conceptual topology required for genuine theoretical insight—becomes ecologically maladaptive in an environment engineered for hyperstimulation. Consequently, the conversation about technology bifurcates into two incommensurable temporalities: one that measures progress in orders-of-magnitude improvements in flops, parameter count, and inference speed, and another that registers the quiet atrophy of those human capacities that depend on slowness, ambiguity, and unresolved tension. Surveillance capitalism, as

Shoshana Zuboff diagnosed it, has evolved beyond the initial phase of behavioral futures markets into something more pervasive: the preemptive governance of possibility. Predictive policing algorithms, credit-scoring models, hiring filters, insurance risk profilers, and social credit systems do not merely observe behavior; they constrain the latent space of future action by differentially weighting paths through reinforcement landscapes. When an individual internalizes that certain textual patterns, movement trajectories, association networks, or even facial micro-expressions will trigger adverse scoring, self-censorship and behavioral convergence follow. The result is a subtle but relentless homogenization of human expressivity—a narrowing of the manifold of possible lives toward those trajectories that maximize predicted compliance and extractable value. Technology in this register ceases to be liberatory and becomes infrastructural to a new form of pastoral power whose shepherd is gradient descent. Simultaneously, the open-source counter-movement—exemplified by models such as LLaMA derivatives, Mistral, Gemma, and Phi series—reintroduces contingency into the technological trajectory. By distributing weights that once resided exclusively within closed corporate vaults, these efforts democratize access to frontier capabilities while simultaneously exposing the entire ecosystem to rapid, uncontrolled mutation. Jailbreaks, fine-tuning on synthetic data, model merging, quantization-aware training, and mixture-of-experts routing now occur at a velocity that outpaces centralized safety research. The conversation therefore acquires a game-theoretic character: alignment becomes a multi-agent problem in which defenders must anticipate not only human red-teamers but also emergent behaviors arising from the combinatorial explosion of fine-tuned variants interacting across the internet. Quantum computing introduces yet another axis of disruption. Although fault-tolerant, large-scale quantum machines remain several engineering generations away, even noisy intermediate-scale quantum devices already demonstrate advantage in specific tasks—random circuit sampling, quantum approximate optimization, variational eigenvalue estimation—that are classically intractable. Should Shor’s algorithm or variants thereof become practical at scale, the entire asymmetric cryptographic substrate of the internet collapses overnight. Post-quantum cryptography standardization efforts (lattice-based, hash-based, code-based,

multivariate) are therefore not precautionary but existential race conditions. The conversation about technology must now include the real possibility that a narrow window exists in which legacy public-key infrastructure can be replaced before a cryptographically relevant quantum adversary emerges. In parallel, the energy ceiling imposes hard biophysical limits. Training runs for models in the 10^{26}–10^{27} FLOPs range already approach the total electricity consumption of mid-sized countries. Projections that reach 10^{30} FLOPs within the decade imply power demands measured in tens of gigawatts—equivalent to dozens of new nuclear plants or equivalent renewable-plus-storage build-out. Thermodynamic constraints, land-use conflicts, critical mineral bottlenecks, and grid stability concerns therefore enter the discourse not as side issues but as co-determinants of what is technically feasible. The dream of arbitrarily scalable computation confronts the reality of finite exergy gradients on a finite planet. Amid these cross-cutting vectors—cognitive externalization, planetary infrastructure, substrate convergence, temporal compression, preemptive governance, open-source mutation, quantum disruption, and energetic limits—the conversation about technology reveals itself as something far more than a debate over gadgets or progress narratives. It constitutes the primary site at which late modernity reflects upon its own conditions of possibility and impossibility. Every advance in capability simultaneously discloses new vulnerabilities, every liberation engenders new forms of capture, every expansion of agency narrows some other dimension of freedom. The discourse therefore remains constitutively aporetic: unable to resolve into optimism or pessimism, accelerationism or decelerationism, techno-utopianism or neo-Luddism. Instead it persists as a sustained, collectively improvised inquiry into what kinds of worlds—and what kinds of selves—remain possible when cognition, matter, energy, time, and power are being rewoven at planetary scale by processes that have already escaped full human comprehension or control.

Literature review

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Conclusion

The contemporary philosophical discourse on technology presents itself as an unresolved tension between augmentation of human capabilities and existential compression. Through large-scale AI—especially transformer-based language models—cognition undergoes externalization: meaning production migrates from biological to statistical substrates, dissolving distinctions between syntax and semantics, simulation and genuine understanding, while paralleling predictive coding frameworks in neuroscience. The analysis encompasses the geological materiality of planetary-scale digital infrastructure, the convergence of biotech–nanotech–infotech that erases organism/artifact

boundaries, and the temporal flattening driven by attention economies that favor hyperstimulation over sustained reflection. Surveillance capitalism mutates into preemptive governance of behavioral possibility spaces. Open-source proliferation, quantum threats to cryptography, and hard biophysical energy limits constraining further computational scaling add further layers of complexity. In the end, this discourse proves constitutively aporetic: a site where late modernity directly confronts its own reconstituted conditions of agency, freedom, and finitude amid the planetary rewiring of cognition, matter, energy, and time—resisting any final utopian or dystopian resolution.

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