# Bridging AI Education and Catholic Social Teachings: Lessons from Sam Altman's Paradigmatic Perspectives

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**DOI: https://doi.org/10.47772/IJRISS.2026.10100245**

**Received: 14 January 2026; Accepted: 19 January 2026; Published: 02 February 2026**

## ABSTRACT

This paper examined Sam Altman's discourse on AI through the lens of epistemological pluralism (positivist, post-positivist, interpretivist, constructivist, and pragmatic) and assesses its implications for Catholic higher education guided by Catholic Social Teaching (CST). Altman's paradigm pluralism is evident in his TEDx talk: his **positivist** stance emphasizes measurable progress and capability growth, while his **post-positivist** approach acknowledges high uncertainty and the provisional nature of knowledge, promoting caution and ethical reflection. His **interpretivist** stance values human relationality and meaning ("you will still really care about when you're talking to a human"), and his **constructivist** view stresses that humans must set the rules for AI governance. Finally, his **pragmatism** focuses on iterative learning, action, and practical application. CST principles—human dignity, the common good, solidarity, and subsidiarity —align strongly with Altman's post-positivist, interpretivist, and constructivist orientations, affirming moral agency and human-centered design. However, pure **positivism** risks reducing human worth to performance metrics, contradicting CST's view of intrinsic human dignity. Unconstrained **pragmatism** risks prioritizing efficiency over ethical boundaries, conflicting with the preferential option for the poor. The study proposed practicable recommendations for Catholic higher education, including integrating technical skills with ethical oversight (positivist constraint), cultivating critical reflection (post-positivist), centering curricula on human experience (interpretivist), promoting participatory governance (constructivist), and ensuring practical AI applications are morally constrained (pragmatic). This synthesis aims to cultivate graduates who are technically competent, ethically informed, and socially responsible.

**Keywords**: Artificial Intelligence (AI), Catholic Social Teaching (CST), Epistemological Pluralism, Higher Education, Sam Altman

## INTRODUCTION

Artificial intelligence (AI) is rapidly transforming society, reshaping economies, education, healthcare, and human interaction at an unprecedented scale. Among the key figures driving this technological revolution is **Sam Altman**, Chief Executive Officer of OpenAI, whose leadership has been instrumental in advancing AI research and applications, particularly through the development of large language models such as GPT-3 and GPT-4 (Biography.com, 2025; WhoInsight, n.d.). Altman's approach combines technological innovation with public discourse on the ethical, social, and existential implications of AI, positioning him as both a technical pioneer and a thought leader in the field.

In his TEDx presentation, "Sam Altman on the Future of AI and Humanity" (Altman, 2025), Altman articulated a vision of AI that is simultaneously **optimistic, cautionary, and socially conscious**. He addresses the technical trajectory of AI, the potential societal transformations it may induce, and the ethical responsibilities of developers and policymakers. His discourse reflects a complex interplay of **positivist, post-positivist, interpretivist, constructivist, and pragmatic paradigms**, demonstrating both confidence in measurable progress and an awareness of uncertainty, human experience, and socially constructed ethical frameworks. This pluralistic epistemological stance provides a unique opportunity to examine AI development not merely as a technological challenge but as a multidimensional phenomenon with moral, social, and educational implications.

The significance of Altman's insights extends to **higher education**, particularly in institutions guided by **Catholic Social Teaching (CST)**. CST emphasizes human dignity, the common good, solidarity, subsidiarity, and the preferential option for the poor (Pontifical Council for Justice and Peace [PCJP], 2004). Integrating AI education within this framework requires navigating the tension between technological capability and ethical responsibility. Altman's presentation, with its blend of technical expertise, practical orientation, and ethical awareness, provides a fertile lens for exploring how higher education can prepare students to engage with AI responsibly, ethically, and in alignment with CST principles.

**Altman and the Contemporary Development of AI**

Altman is widely recognized as a pivotal figure in the contemporary advancement of AI, particularly through his leadership at OpenAI, which has produced large-scale generative models such as GPT-3, GPT-4, and more recent multimodal systems shaping education, governance, and creative industries (Biography.com, 2025; OpenAI, 2024). His professional trajectory—from early computing exposure to entrepreneurial ventures and executive leadership—reflects a convergence of technical expertise, market-oriented pragmatism, and policy engagement. More recent public discourse by Altman foregrounds AI alignment, safety, and global governance, emphasizing that technological acceleration must be accompanied by ethical oversight and institutional accountability (Altman, 2023, 2024).

Scholars increasingly note that AI leaders such as Altman do not merely influence technological trajectories but actively shape epistemic authority, public trust, and regulatory imagination surrounding AI (Floridi, 2023; Jasanoff, 2021). Altman's public engagements—including congressional testimony and international forums—underscore the importance of human-centered AI governance, transparency, and ethical foresight. This positions his discourse within a pluralistic epistemological orientation that blends positivist confidence in technical progress with post-positivist caution regarding uncertainty, risk, and moral consequence. Such leadership reinforces the claim that epistemological orientations play a central role in how AI systems are framed, legitimized, and integrated into social institutions, including higher education (Müller, 2020; Rahwan et al., 2019).

**Paradigmatic Orientations and Human Historical Developments**

Paradigmatic orientations refer to dominant ways of knowing that shape how societies generate knowledge, exercise power, and organize social life. Across human history, paradigm shifts have accompanied major intellectual, technological, and moral transformations, revealing that historical development is not driven solely by material progress but by evolving epistemological commitments (Guba & Lincoln, 1994; Kuhn, 1970). In the context of AI, these shifts are particularly salient, as digital technologies intensify long-standing tensions between objectivity, interpretation, ethics, and action.

Positivism, emerging from the Enlightenment and Scientific Revolution, privileged empirical observation, measurement, and objectivity, enabling advances in science, engineering, and computation (Comte, 1853/1975). Contemporary AI development—particularly machine learning and data-driven optimization—continues to draw heavily on positivist assumptions that complex phenomena can be modeled, predicted, and optimized. However, recent critiques argue that such approaches risk reinforcing technocratic governance, algorithmic bias, and instrumental rationality when detached from ethical reflection and social context (Benjamin, 2019; O'Neil, 2016).

Post-positivism emerged in response to the limitations of positivism, emphasizing fallibilism, critical realism, and ethical responsibility in knowledge production (Phillips & Burbules, 2000). In AI ethics, post-positivist perspectives inform contemporary calls for precaution, accountability, and reflexivity, particularly in high-stakes domains such as education, health, and governance (Floridi et al., 2018). This paradigm resonates with recent regulatory frameworks that acknowledge uncertainty and risk, such as the European Union's AI Act, which adopts a risk-based approach to AI governance rather than assuming technological neutrality (European Union, 2024).

Interpretivism and constructivism foreground meaning-making, culture, and social interaction, asserting that

reality is co-constructed through language, power relations, and shared practices (Berger & Luckmann, 1966; Lincoln & Guba, 1985). In AI and education, constructivist perspectives underpin research showing that students' engagement with AI is shaped by institutional culture, disciplinary norms, and ethical narratives rather than technical exposure alone (Selwyn, 2022). These paradigms support participatory and dialogical approaches to AI governance, emphasizing inclusion, transparency, and contextual sensitivity.

Pragmatism, rooted in action, adaptability, and problem-solving, has gained renewed relevance in periods of rapid technological change. Contemporary AI education often reflects pragmatic orientations through project-based learning, industry partnerships, and applied ethics modules (Dewey, 1938; Kolmos et al., 2021). Yet scholars caution that pragmatism without ethical anchoring risks normalizing "what works" over "what ought to be," especially when institutional incentives privilege efficiency and competitiveness (Winner, 2020).

Taken together, these paradigmatic orientations demonstrate that human development—and AI governance in particular—is dialogical rather than linear. Addressing contemporary challenges such as generative AI, academic integrity, and algorithmic decision-making in education requires integrating empirical rigor, ethical reflection, social meaning, and practical wisdom (Guba & Lincoln, 1994; Kuhn, 1970).

**CST and Ethical Governance in AI**

CST provides a normative and anthropological framework for evaluating AI and technological innovation. Core principles—human dignity, the common good, solidarity, subsidiarity, preferential option for the poor, and stewardship—offer ethical guidance that challenges reductionist or purely instrumental views of intelligence (PCJP, 2004; Francis, 2015). Recent Vatican documents explicitly address AI, emphasizing that technological systems must remain at the service of the human person and never replace moral agency or relational responsibility (Pontifical Academy for Life, 2020; Francis, 2024).

In Catholic higher education, emerging literature highlights the urgency of embedding AI ethics across curricula rather than confining ethical reflection to standalone courses (Long, 2017; Roche et al., 2022). CST aligns with post-positivist and constructivist critiques of technological determinism, while offering a moral vocabulary grounded in relational anthropology and social justice. This ethical stance complements Altman's calls for responsible innovation while simultaneously challenging market-driven pragmatism that prioritizes scalability over solidarity.

**Implications of Paradigmatic Orientations for Catholic Higher Education**

The integration of AI within Catholic higher education requires navigating multiple paradigmatic orientations. Positivist approaches support measurable competencies in data literacy and AI system design but risk reducing education to performance metrics if detached from moral formation (CCC, 1997). Post-positivist and interpretivist paradigms encourage reflective learning environments that cultivate prudence, empathy, and ethical discernment in AI use (John Paul II, 1987; Selwyn, 2022).

Constructivist orientations further promote participatory governance, enabling students and faculty to co-create ethical guidelines for AI use in teaching, assessment, and research (Pius XI, 1931; Paul VI, 1965). Pragmatic approaches—manifested in internships, AI labs, and real-world projects—enhance employability and innovation but must be normatively constrained by CST to ensure alignment with the common good (Francis, 2015).

Recent empirical studies demonstrate that interdisciplinary AI ethics education—combining technical training, philosophical inquiry, and community engagement—enhances students' moral reasoning, civic responsibility, and awareness of AI's societal impacts (Rosenfeld et al., 2021; Zawacki-Richter et al., 2023). These approaches operationalize pluralistic epistemologies within faith-based institutions, ensuring that AI education remains both technologically relevant and ethically grounded.

**Synthesis and Research Gap**

The literature indicates that Altman's pluralistic epistemological orientations offer both opportunities and

tensions for higher education. Positivist and pragmatic tendencies support innovation and measurable outcomes, while post-positivist, interpretivist, and constructivist perspectives foreground ethical reflection, relationality, and participatory governance. CST provides a normative compass that integrates these orientations into a coherent ethical vision centered on human dignity and the common good.

Despite growing scholarship on AI ethics and education, a critical gap remains in examining how **AI leaders' epistemological orientations**—such as Altman's—can inform the integration of **technical competence, ethical formation, and faith-based values** in higher education. Much of the existing literature treats AI skills and moral education as parallel rather than integrated domains, leaving graduates insufficiently prepared to address AI's social, moral, and relational implications (Bostrom, 2014; Floridi, 2023; Rosenfeld et al., 2021). By situating Altman's discourse within CST and paradigmatic theory, this study responds to the need for a **conceptual and actionable framework** that enables Catholic higher education institutions to cultivate graduates who are not only AI-literate but also ethically responsible and socially committed.

### Theoretical Framework

The theoretical framework integrates **epistemological pluralism** and **CST** to examine how AI education and ethical formation can be aligned in higher education. Epistemological pluralism recognizes multiple ways of knowing—empirical, interpretive, socially constructed, and action-oriented—and provides a lens for analyzing the diverse paradigmatic orientations reflected in Altman's discourse, including positivist, post-positivist, interpretivist, constructivist, and pragmatic perspectives (Guba & Lincoln, 1994; Morgan, 2014; Altman, 2025). Together, these paradigms explain how AI education balances technical competence, ethical reflection, social meaning, and practical application, while also revealing the limitations of narrowly performance-driven or instrumental approaches (Bostrom, 2014; Floridi & Cowls, 2019).

CST serves as the framework's normative foundation, grounding epistemological diversity in moral principles such as human dignity, the common good, solidarity, subsidiarity, and the preferential option for the poor (Pontifical Council for Justice and Peace [PCJP], 2004; Francis, 2015). By anchoring AI education within CST, the framework avoids ethical relativism and ensures that technological innovation remains human-centered and socially responsible. This integrated approach supports the study's objectives of identifying Altman's epistemological orientations, assessing their alignment with CST, examining implications for higher education, and proposing actionable recommendations for ethical AI education and governance (Rosenfeld et al., 2021; Smith & Anderson, 2020).

### Statement of the Problem

This paper analyzed Altman's TEDx discourse through the lens of his **paradigmatic orientations**, examining the implications for AI education, research, and governance in Catholic higher education. By linking his epistemological stance with CST principles, the study seeks to generate actionable recommendations for integrating ethical AI development, human-centered curricula, and socially responsible innovation within educational institutions. Specifically, this paper answered the following questions: (1) How do Altman's epistemological orientations (positivist, post-positivist, interpretivist, constructivist, and pragmatic) manifest in his discourse on AI, as presented in his TEDx talk?; (2) How can Altman's presentation be understood through the perspective of the CST?; (3) Which of Altman's paradigmatic orientations align with or contradict the principles of CST, particularly in the context of human dignity, the common good, and ethical governance?; (4) Given Altman's academic and professional history,, which part of his background can explain his paradigm pluralism?; (5) What are the implications of Altman's paradigmatic orientations for higher education institutions seeking alignment with CST?; (6) What practicable recommendations in the context of higher education can be drawn from the implications of Altman's paradigmatic orientations for higher education institutions seeking alignment with CST?;

## METHODOLOGY

### Research Paradigm

This study adopts a **constructivist–interpretivist research paradigm** informed by **post-positivist awareness**,

reflecting the epistemological pluralism evident in Altman's discourse on AI. Constructivism and interpretivism hold that knowledge is socially constructed, context-bound, and shaped by human meaning, relational understanding, and ethical interpretation (Guba & Lincoln, 1994; Morgan, 2014). The post-positivist dimension introduces reflexivity, critical scrutiny, and acknowledgment of uncertainty, aligning with Altman's expressed caution regarding the societal consequences of large-scale AI deployment (Altman, 2025). Together, this paradigm supports an interpretive examination of how Altman's epistemological orientations can inform the integration of AI education and CST in higher education, without assuming epistemic neutrality or universal generalizability.

## Research Approach

The study employs a **qualitative case study approach**, with **Altman's public discourse on AI** serving as the bounded case. Specifically, the case comprises Altman's TEDx presentation, selected public statements, and professional writings, treated collectively as a coherent discursive corpus. The purpose of the case study is not to evaluate Altman as an individual per se, but to **analyze how a prominent AI leader's articulated epistemological orientations illuminate broader educational and ethical implications** for higher education institutions seeking alignment with CST.

A case study approach is appropriate because it enables in-depth examination of a complex, contemporary phenomenon within its real-world context and allows for the integration of multiple sources of evidence to generate rich, contextualized understanding (Yin, 2018). This approach facilitates analytic—not statistical—generalization by linking insights from the case to existing theory on epistemology, AI ethics, and CST-informed education.

## Research Design

A **qualitative research design** underpins the study, prioritizing depth of interpretation over measurement or prediction. Qualitative inquiry is well suited to examining epistemological orientations, ethical reasoning, and value-laden discourse, as it allows for the exploration of meanings, assumptions, and relational dynamics embedded in texts (Creswell & Poth, 2018). The design supports interpretive understanding of how AI-related narratives can inform curricular, pedagogical, and governance practices in higher education, rather than aiming for causal explanation or broad generalization.

## Data Sources

Primary data consist of publicly available texts, including:

1. A TEDx transcript: *Sam Altman on the Future of AI and Humanity* (Altman, 2025); and
2. Selected published interviews and speeches that articulate Altman's perspectives on AI development, governance, and ethical responsibility (Biography.com, 2025; WhoInsight, n.d.).

Secondary sources include peer-reviewed literature on AI ethics, epistemological paradigms, CST, and higher education pedagogy. These sources are used to contextualize, interpret, and triangulate findings, strengthening the analytic rigor of the case study.

## Research Method

The study utilizes **document analysis** as its primary method, employing **qualitative content analysis** to examine textual data systematically. Document analysis is appropriate for analyzing publicly available discourse, allowing the researcher to identify explicit claims, recurring themes, and implicit value orientations related to epistemology and CST alignment (Bowen, 2009). This method supports a structured yet flexible examination of how ethical and epistemological assumptions are articulated and interconnected within the case.

### Instrument

A **theory-informed coding framework** was developed to guide analysis. The framework integrates:

1. Epistemological orientations—positivist, post-positivist, interpretivist, constructivist, and pragmatic; and

2. CST principles—human dignity, the common good, solidarity, subsidiarity, and the preferential option for the poor (Pontifical Council for Justice and Peace [PCJP], 2004; Francis, 2015).

This framework enabled consistent identification, categorization, and thematic coding of relevant textual segments across primary and secondary sources.

### Data Construction and Analysis

Data construction followed a systematic, multi-stage process:

1. **Transcript and document verification** to ensure accuracy and completeness;

2. **Thematic coding** using the epistemological and CST-based framework;

3. **Pattern analysis** to identify convergences, tensions, and silences across paradigmatic orientations; and

4. **Synthesis** of findings into conceptual insights and practicable recommendations for CST-aligned AI education and governance in higher education.

### Ethical Considerations

Ethical rigor was maintained through several measures:

1. **Respect for intellectual property**, with all sources cited in accordance with APA 7 guidelines;

2. **Transparency and reflexivity**, acknowledging the researcher's interpretive role and avoiding claims of objectivity;

3. **Use of public-domain data**, minimizing ethical risk and issues of consent; and

4. **Alignment with CST principles**, ensuring that interpretation foregrounds human dignity, moral responsibility, and social justice (Francis, 2015; PCJP, 2004).

## RESULTS

### How do Altman's epistemological orientations (positivist, post-positivist, interpretivist, constructivist, and pragmatic) manifest in his discourse on AI, as presented in his TEDx talk?

Altman's discussion of the future of AI reflects a **paradigm-pluralist orientation**, wherein multiple epistemological paradigms operate simultaneously to explain a complex socio-technical phenomenon. Paradigm pluralism recognizes that emerging technologies such as AI cannot be adequately understood through a single lens, as they involve empirical performance, uncertainty, meaning-making, social construction, and practical consequences.

From a **positivist perspective**, Altman frames AI progress as an objective and measurable transformation. He characterizes the present moment as "this once-in-human-history transition where humans go from being the smartest thing on planet Earth to not the smartest thing on planet Earth" (Altman, 2023). This statement reflects a positivist assumption that intelligence can be comparatively assessed and that technological

advancement follows observable trajectories. His emphasis on increasing AI capability suggests confidence in empirical indicators of progress and performance-based evaluation.

However, Altman simultaneously adopts a **post-positivist stance** by emphasizing uncertainty and the limits of current knowledge. He explicitly acknowledges epistemic fallibility, stating, "I have a very high uncertainty on all of this" (Altman, 2023). Rather than presenting AI development as a deterministic outcome, he underscores the provisional nature of predictions and the need for continuous reassessment. This aligns with post-positivism's assertion that while reality exists, human understanding of it is always incomplete and subject to revision.

Altman's remarks further resonate with **interpretivism**, particularly in his attention to human experience and meaning. He observes that although people may increasingly interact with AI, "you will still really care about when you're talking to a human" (Altman, 2023). This reflects an interpretivist concern with subjective meaning and social interaction, emphasizing that the significance of AI is shaped not solely by technical capability but by how individuals interpret and emotionally respond to it.

Closely related is Altman's alignment with **constructivism**, evident in his insistence that AI systems must be governed by human-defined norms and values. He argues that "humans have got to set the rules—AI can follow them" (Altman, 2023), underscoring that ethical standards and governance frameworks are socially constructed rather than technologically inherent. This view situates AI development within cultural, institutional, and historical contexts shaped by collective human decision-making.

Binding these paradigms together is a distinctly **pragmatist orientation**. Altman emphasizes action, experimentation, and adaptation, encouraging people to "just use the tools" and learn from their consequences (Altman, 2023). He further notes that AI will reshape society through practical engagement, asserting that "eventually, I think the whole economy transforms" (Altman, 2023). This reflects pragmatism's focus on usefulness, outcomes, and iterative problem-solving rather than abstract theorizing alone.

Taken together, Altman's discourse demonstrates that AI is simultaneously an empirical reality, an uncertain future, a lived human experience, a socially constructed system, and a practical tool. Through the lens of paradigm pluralism, his message illustrates how positivism, post-positivism, interpretivism, constructivism, and pragmatism intersect to provide a more comprehensive understanding of AI's implications for humanity.

Table 1 Alignment of Altman's Messages with Research Paradigms

| Research Paradigm | Core Assumptions | Altman's Aligned Messages | Illustrative Focus in the Transcript |
|---|---|---|---|
| **Positivism** | Reality is objective, measurable, and governed by discoverable laws; knowledge advances through empirical observation and prediction. | AI development is presented as a cumulative and scalable process; performance improves with larger models, more data, and better computation; intelligence is discussed in terms of measurable capability. | Emphasis on technical progress, capability growth, and AI outperforming humans in specific tasks. |
| **Post-Positivism** | Reality exists but can only be imperfectly known; knowledge is provisional, probabilistic, and subject to revision. | Acknowledgment of uncertainty in AI outcomes; emphasis on humility, safety, governance, and ongoing oversight; recognition of unintended consequences. | Statements stressing uncertainty, the need for caution, and adaptive regulatory frameworks. |
| **Interpretivism** | Reality is understood through subjective meaning, social interaction, and human | The significance of AI depends on how people perceive and interact with it; AI as conversational partner or | Discussion of human–AI relationships and the experiential dimensions |

| | | | |
|---|---|---|---|
| | interpretation. | collaborator; changing meanings of creativity and work. | of AI use. |
| **Constructivism** | Knowledge and social reality are constructed through cultural, historical, and institutional processes. | AI systems should reflect human values; ethical rules and governance frameworks are socially negotiated; society actively shapes AI's future. | Emphasis on human-designed rules, norms, and collective decision-making in AI governance. |
| **Pragmatism** | Truth and meaning are evaluated by practical consequences and what works in real-world contexts. | Focus on AI's usefulness in solving real problems; iterative deployment and learning; balancing risks and benefits through action and adjustment. | Orientation toward application, experimentation, and policy refinement based on outcomes. |

**How can Altman's presentation be understood through the perspective of the CST?**

Altman's presentation on the future of AI raises ethical and social questions that resonate strongly with the principles of Catholic Social Teaching (CST). CST provides a moral framework for evaluating social and technological developments by prioritizing human dignity, justice, the common good, and moral responsibility. From this perspective, Altman's largely optimistic yet cautious stance on AI can be interpreted as both convergent with and challenging to Catholic ethical concerns.

At the heart of CST is the principle of the dignity of the human person, which holds that all social arrangements and technologies must serve the integral development of the human person rather than reduce individuals to means or functions (Catechism of the Catholic Church [CCC], 1997). Altman's recognition that humans may no longer be "the smartest thing on planet Earth" raises a critical anthropological question from a Catholic standpoint. While Altman frames this shift in terms of cognitive capability, CST would caution against equating intelligence with human worth. Human dignity, in Catholic teaching, is grounded not in productivity or intelligence but in being created *imago Dei* (Genesis 1:27). Altman's reassurance that people will "still really care about when you're talking to a human" implicitly affirms this distinction, suggesting that technological superiority does not replace the moral and relational uniqueness of human beings.

The CST principle of the common good—defined as the social conditions that allow individuals and communities to flourish (*Gaudium et Spes*, 1965)—is also central to evaluating Altman's vision. His emphasis on democratizing access to AI and ensuring that its benefits are widely distributed aligns with the Church's insistence that technological progress must serve all, not merely economic elites. However, CST would further insist that access alone is insufficient; the deployment of AI must actively reduce inequality rather than exacerbate existing social and economic disparities. Altman's acknowledgment of large-scale societal transformation invites ethical scrutiny regarding who bears the costs of disruption and who enjoys its benefits.

Closely related is the principle of solidarity, which emphasizes moral responsibility for others, particularly the vulnerable (John Paul II, 1987). Altman's concern for safety, governance, and responsible oversight reflects an implicit recognition of solidarity, especially in his acknowledgment of uncertainty and potential harm. From a Catholic perspective, this aligns with the moral obligation to anticipate harm and protect those least equipped to adapt to rapid technological change, such as displaced workers, marginalized communities, and developing nations.

The principle of subsidiarity further illuminates Altman's insistence that humans must "set the rules" for AI. Subsidiarity holds that decisions should be made at the most immediate level consistent with the common good (Pius XI, 1931). Altman's emphasis on human governance resonates with this principle, yet CST would caution against excessive concentration of decision-making power in corporations or technocratic elites. Ethical AI governance, from a Catholic standpoint, requires participation by governments, civil society, educators, and local communities, not only technology developers.

Altman's pragmatic orientation toward experimentation and adaptation can be read in light of CST's preferential option for the poor. While innovation and experimentation are not inherently problematic, Catholic ethics demands that policies and practices be evaluated by their impact on the poorest and most vulnerable (Pontifical Council for Justice and Peace, 2004). A CST-informed critique would therefore ask whether iterative deployment risks treating disadvantaged populations as testing grounds for technological experimentation without adequate safeguards.

Finally, CST's call for responsible stewardship extends beyond the natural environment to include social and moral ecosystems. Pope Francis (2015) emphasizes that technological power must be guided by ethical responsibility and care for human relationships. Altman's acknowledgment of uncertainty and his appeal for humility echo this call, yet CST would insist that humility be institutionalized through enforceable ethical norms, not left solely to goodwill or market incentives.

Hence, Altman's presentation aligns with CST in its concern for human-centered governance, shared responsibility, and cautious optimism. However, CST deepens the ethical evaluation by insisting that AI development be explicitly oriented toward human dignity, social justice, and the protection of the vulnerable. From a Catholic social perspective, the question is not merely whether AI can advance human capability, but whether it authentically promotes the flourishing of every person and the moral integrity of society.

**Which of Altman's paradigmatic orientations align with or contradict the principles of CST?**

CST provides a normative moral framework for evaluating technological developments by emphasizing human dignity, the common good, solidarity, subsidiarity, the preferential option for the poor, and responsible stewardship (Pontifical Council for Justice and Peace [PCJP], 2004). When Altman's presentation on AI is examined through the paradigmatic lenses of positivism, post-positivism, interpretivism, constructivism, and pragmatism, these paradigms reveal varying degrees of alignment with CST.

Altman's **post-positivist orientation** demonstrates strong alignment with CST. His explicit acknowledgment of uncertainty and the limits of prediction reflects epistemic humility, a disposition consistent with the Church's teaching on prudence and moral responsibility. CST cautions against uncritical faith in human reason or technological power, affirming that authentic development requires ethical discernment and humility (Francis, 2015; PCJP, 2004). By resisting technological determinism, post-positivism affirms the CST view that moral judgment must accompany scientific progress.

Similarly, **constructivism** aligns closely with CST through its emphasis on human moral agency and social responsibility. Altman's assertion that humans must define the rules governing AI resonates with the CST principle of **subsidiarity**, which holds that social decisions should be made by human communities at the most appropriate level rather than delegated to impersonal systems (Pius XI, 1931). This paradigm reflects CST's insistence that technologies must be shaped by moral norms oriented toward the **common good**, rather than allowing technical systems to dictate social outcomes (Paul VI, 1965).

Altman's **interpretivist orientation** also shows moderate to strong compatibility with CST. His emphasis on the enduring importance of human relationships and meaning-making aligns with the Catholic understanding of the human person as inherently relational. CST affirms that human flourishing is realized through relationships grounded in love, solidarity, and community, not merely through functional efficiency (John Paul II, 1987). While interpretivism prioritizes subjective experience, CST complements this focus by situating human meaning within an objective moral order rooted in human dignity (Catechism of the Catholic Church [CCC], 1997).

In contrast, **pragmatism** presents a conditional alignment with CST. Altman's emphasis on experimentation, iterative deployment, and practical outcomes reflects pragmatism's focus on what works in real-world contexts. CST does not reject practical problem-solving; however, it insists that moral legitimacy cannot be determined solely by outcomes. The Church teaches that certain ethical boundaries are non-negotiable, particularly when the dignity of the vulnerable is at stake (PCJP, 2004). Without firm moral constraints, a

pragmatic approach risks instrumentalizing disadvantaged populations, contradicting the CST principle of the **preferential option for the poor**.

The paradigm that presents the most significant tension with CST is **positivism**. Altman's framing of AI progress in terms of measurable intelligence and performance risks reducing human value to cognitive or functional capability. CST explicitly rejects such reductionism, affirming that human dignity is intrinsic and rooted in the belief that every person is created in the image and likeness of God (*imago Dei*), regardless of intelligence, productivity, or utility (CCC, 1997; Genesis 1:27). From a Catholic perspective, technological superiority must never become a criterion for evaluating human worth or social value.

Taken together, this analysis indicates that Altman's post-positivist, constructivist, and interpretivist orientations are largely consonant with CST, while his pragmatic stance requires clear ethical boundaries to remain morally acceptable. His positivist framing of intelligence and progress introduces the clearest contradiction with CST's anthropological and moral commitments. This underscores the CST assertion that technological development must be judged not by what is possible or efficient, but by whether it authentically serves human dignity and the common good (Francis, 2015).

**Given Altman's academic and professional history, which part of his background can explain his paradigm pluralism?**

Altman's pragmatic and positivist tendencies in discourse about AI can be traced to formative experiences in his education and professional trajectory. Altman grew up with an early and intense interest in technology, receiving his first computer at age eight and learning how to program and deconstruct hardware, experiences that grounded his worldview in practical problem-solving and technical engagement (Biography.com, 2025). These early encounters with computing established a foundation in empirical thinking and action-oriented learning that aligns with positivism's emphasis on observable, measurable progress and utility.

Altman later enrolled at Stanford University to study computer science, a discipline deeply rooted in logical reasoning and empirical evaluation of systems' performance (Biography.com, 2025; WhoInsight, n.d.). Although he did not complete a degree, his immersion in a technology-driven academic environment likely further reinforced a behaviorally oriented, results-centric mindset consistent with positivist paradigms. His decision to leave formal studies to found the startup Loopt underscores a preference for experiential action over theoretical abstraction—a hallmark of pragmatic orientation (WhoInsight, n.d.; Biography.com, 2025). This early choice to value hands-on innovation over traditional academic credentialing reflects pragmatism's focus on what works in practice.

Professionally, Altman's tenure with Y Combinator (YC), first as a partner and later as president, amplified his pragmatic commitments. At YC, he was deeply involved in accelerating startups with real-world impact, scaling incubated companies like Airbnb and Stripe through iterative product development and performance feedback loops (WhoInsight, n.d.). This environment rewards practical problem solving, rapid iteration, and real-time responsiveness to user and market data, fostering a mindset where effectiveness and measurable outcomes often take precedence over theoretical purity. Such a setting naturally nurtures pragmatic decision-making oriented around results and continuous improvement.

Altman's leadership at OpenAI, particularly as CEO since 2019, further manifests his positivist inclination toward measurable advancement in AI capability. Under his stewardship, OpenAI has delivered successive generations of large language models (e.g., GPT-3 and GPT-4) that demonstrate incremental performance gains and broader applicability, reinforcing confidence in empirical progress as a driver of technological value (WhoInsight, n.d.; Wikipedia, 2025). This focus on scalable performance metrics and demonstrable improvements embodies a classic positivist confidence in cumulative, quantifiable knowledge growth.

Moreover, his professional history within the venture capital ecosystem—where the viability of ideas is judged by executable outcomes, scalability, and economic return—cultivated a results-driven logic that privileges data, iteration, and visible impact. His investment strategy, which emphasizes backing technologies that substantially improve human conditions, reflects the entwining of pragmatism with a forward-looking optimism about technology's capacity to solve real problems (WhoInsight, n.d.).

In sum, Altman's early immersion in computing, technical academic training, entrepreneurial decisions to prioritize applied innovation, and leadership roles in environments that reward measurable success and rapid iteration collectively explain his pragmatic and positivist stance. These elements of his background shaped a worldview that privileges practical engagement with problems, reliance on empirical evidence of effectiveness, and confidence in measurable technological progression as central to human advancement.

**Altman's Post-Positivist, Interpretivist, and Constructivist Positions on AI**. Altman's nuanced approach to AI exhibits clear post-positivist, interpretivist, and constructivist tendencies, reflecting not only technical expertise but also an awareness of social, ethical, and human dimensions. Several aspects of his academic and professional history help account for these positions.

Altman's post-positivist orientation—marked by humility, recognition of uncertainty, and a probabilistic understanding of AI's societal impact—is influenced by his leadership role at OpenAI, where he oversees the development of cutting-edge, high-risk AI technologies (Biography.com, 2025). Unlike a purely positivist stance, post-positivism acknowledges that complex systems are not fully predictable. Altman's repeated statements about uncertainty, such as "I have a very high uncertainty on all of this" (Altman, 2025), suggest that his professional exposure to the limits of current AI capabilities and the potential for unintended consequences cultivates a cautious, adaptive mindset consistent with post-positivist epistemology.

Altman's interpretivist stance—which emphasizes human meaning, relational experience, and social interpretation of AI—can be linked to his entrepreneurial background, particularly his time at Y Combinator, where he observed the profound effects of technology on people's lives and organizations (WhoInsight, n.d.). By focusing on how individuals and societies experience AI, he recognizes that technology is not merely a set of tools but a socially embedded phenomenon. For instance, he notes that although AI may become more capable, "you will still really care about when you're talking to a human" (Altman, 2025), highlighting the interpretive layer of human–AI interaction.

His constructivist tendencies—which stress the importance of human-defined norms, ethical frameworks, and social governance—reflect both his technical understanding and public advocacy for responsible AI. Altman repeatedly underscores that "humans have got to set the rules—AI can follow them" (Altman, 2025), signaling a belief that AI's integration into society is shaped by human values and collective decision-making rather than determined solely by technological imperatives. This aligns with constructivism's emphasis on socially negotiated knowledge and institutional processes. His experience in collaborative, multidisciplinary environments, from startups to AI research, likely reinforced the notion that ethical and social structures are actively constructed to guide innovation safely and responsibly.

In summary, Altman's post-positivist, interpretivist, and constructivist orientations can be explained by his exposure to high-stakes, uncertain technological innovation, his observations of human-technology interactions, and his commitment to ethical governance. These experiences foster a worldview in which AI is understood as simultaneously technically grounded, socially meaningful, and ethically regulated, reflecting an integrated, pluralistic epistemological stance.

**What are the implications of Altman's background and paradigmatic orientations for higher education institutions seeking alignment with CST?**

Altman's diverse epistemological positions on AI—positivist, post-positivist, interpretivist, constructivist, and pragmatic—have several implications for higher education institutions seeking alignment with **CST**. Each paradigm offers opportunities and challenges for integrating AI education, research, and governance within a moral and ethically informed framework.

**Positivism and Its Implications**

Altman's **positivist orientation**, which emphasizes measurable progress, performance, and efficiency, offers higher education institutions tools for **data-driven assessment, quantitative research, and technological**

**skill development**. From a CST perspective, such orientation can support responsible innovation when applied to improving educational access or institutional effectiveness (CCC, 1997).

However, positivism may conflict with CST principles if overemphasized. Reducing human worth to measurable outcomes or intelligence risks undermining **human dignity** and **integral human development** (Francis, 2015). Catholic higher education must therefore **balance technical skill acquisition with formation in ethics, social responsibility, and moral reasoning**, ensuring that AI competencies are not taught in isolation from humanistic and theological reflection.

**Post-Positivism and Its Implications**

Altman's **post-positivist stance**—acknowledging uncertainty and the provisional nature of knowledge—aligns closely with CST's principles of **prudence, stewardship, and moral responsibility** (PCJP, 2004). Higher education can adopt this approach by fostering **critical thinking, reflective judgment, and cautious experimentation** in AI and technology programs. This encourages students to understand that innovation carries ethical and social consequences and that knowledge is fallible, supporting **responsible decision-making and ethical foresight**.

**Interpretivism and Its Implications**

Altman's **interpretivist orientation**, which emphasizes human meaning and relational experiences, resonates with CST's view of the human person as relational and socially embedded (John Paul II, 1987). In higher education, this suggests a focus on **human-centered curricula** where students engage with AI not merely as a technical tool but as a socially mediated phenomenon. Courses could explore **AI ethics, societal impact, and the human consequences of technology**, cultivating empathy, solidarity, and respect for human dignity.

**Constructivism and Its Implications**

Altman's **constructivist approach**, highlighting human-defined norms, rules, and governance structures, directly supports CST principles of **subsidiarity and the common good** (Pius XI, 1931; Paul VI, 1965). Catholic higher education can integrate this paradigm by encouraging students to **participate in shaping ethical and institutional frameworks for AI**. This approach promotes **collaborative governance, community engagement, and socially responsible innovation**, emphasizing that technology is a human-constructed enterprise that must reflect shared moral values.

**Pragmatism and Its Implications**

Altman's **pragmatic stance**, focused on actionable outcomes and iterative learning, offers practical advantages for **experiential learning, problem-based projects, and applied research**. When aligned with CST, pragmatism can support initiatives that **solve real-world social problems while respecting ethical boundaries** (Francis, 2015). However, unchecked pragmatism risks prioritizing efficiency over morality. Catholic higher education must therefore **embed ethical oversight, prioritize the common good, and safeguard vulnerable populations** when implementing pragmatic, outcome-oriented AI projects.

**Integrated Implications**

Collectively, Altman's paradigmatic orientations suggest that Catholic higher education institutions can:

1. **Leverage positivist methods** to develop measurable AI competencies while ensuring ethical oversight.
2. **Adopt post-positivist caution** in technological experimentation, promoting humility and ethical responsibility.
3. **Embrace interpretivist insights** to foreground human experience and relational understanding in curricula.

4. **Incorporate constructivist approaches** to foster participatory governance and moral deliberation in technology design.

5. **Apply pragmatic strategies** to solve societal problems, guided by CST principles to prevent ethical compromise.

In essence, the integration of Altman's paradigms within Catholic higher education demands a **pluralistic, ethically informed approach**: one that combines technical rigor, critical reflection, relational understanding, social construction of norms, and practical application—always subordinated to **human dignity, the common good, and moral stewardship**.

## DISCUSSION

### How CST Should Be Learned for Responsible Engagement with AI

To ensure that learners are able to responsibly engage with AI, CST must be learned not as an abstract moral add-on but as an **embedded, formative framework** integrated into AI education through experiential, reflective, and interdisciplinary pedagogies. CST provides a normative orientation grounded in human dignity, the common good, solidarity, subsidiarity, and the preferential option for the poor (Pontifical Council for Justice and Peace [PCJP], 2004; Francis, 2015). However, learning CST in isolation is insufficient; it must be woven into the technical, ethical, and social dimensions of AI education so that moral reasoning develops alongside technical competence.

From a **positivist orientation**, CST-informed AI education should integrate measurable technical competencies with explicit ethical oversight. Higher education institutions can design structured AI curricula that combine coding, data analytics, and AI modeling with ethics modules that assess not only performance outcomes but also social impact and moral responsibility. Experiential learning approaches—such as project-based AI tasks—enable students to demonstrate technical proficiency while evaluating alignment with CST principles, particularly human dignity and the common good (Catechism of the Catholic Church [CCC], 1997; Francis, 2015). In this way, empirical rigor is preserved without reducing education to purely instrumental metrics.

A **post-positivist orientation** further requires cultivating critical reflection and ethical caution. Learners must be trained to recognize uncertainty, unintended consequences, and moral risk in AI deployment. This can be achieved through case-based instruction examining AI failures, bias, or misuse, coupled with structured reflection sessions that encourage prudence and ethical foresight (PCJP, 2004). Such reflective practices echo Altman's caution that "we don't fully understand the consequences of deploying AI at scale, so we need to proceed cautiously" (Altman, 2025), reinforcing humility and moral responsibility as core learning outcomes.

An **interpretivist orientation** emphasizes centering AI education on human experience and relational understanding. CST should inform interdisciplinary courses that examine how AI reshapes interpersonal relationships, social structures, and cultural values, particularly among vulnerable populations. Integrating AI studies with social sciences, humanities, and theology allows learners to appreciate the relational and social dimensions of technology, fostering empathy, solidarity, and moral imagination (John Paul II, 1987; Smith & Anderson, 2020). Service-learning and community-engaged AI projects further translate CST principles into lived experience, helping students understand how AI affects real communities.

From a **constructivist perspective**, CST learning should promote participatory governance and shared ethical norm construction. Students can be engaged in student-led ethics committees, AI governance simulations, or collaborative policy labs where they actively construct and evaluate ethical frameworks for AI use. Such practices reflect CST principles of subsidiarity and the common good, reinforcing the idea that ethical governance is socially negotiated rather than imposed (Pius XI, 1931; Paul VI, 1965). Knowledge, in this sense, is co-constructed through dialogue, aligning with constructivist and interpretivist assumptions about learning (Guba & Lincoln, 1994).

Finally, a **pragmatic orientation** underscores the importance of applied learning that addresses real-world problems while remaining ethically bounded. Interdisciplinary innovation labs can encourage students to apply AI to healthcare, education, environmental stewardship, or social justice initiatives, with faculty oversight ensuring alignment with CST moral principles. This approach balances problem-solving and innovation with moral accountability, ensuring that practicality does not override concern for human dignity or the preferential option for the poor (Francis, 2015). As Altman notes, "Our goal is to build AI that can solve real-world problems, from education to healthcare" (Altman, 2025), a goal that CST helps orient toward ethically responsible ends.

## CONCLUSION

Analyzing Altman's discourse provides a valuable conceptual and practical foundation for rethinking Catholic higher education in the age of AI. His pluralistic epistemological stance—integrating positivist, post-positivist, interpretivist, constructivist, and pragmatic orientations—demonstrates how technical expertise, ethical reflection, human-centered understanding, and applied problem-solving can coexist within complex technological domains (Altman, 2025). When these orientations are integrated with CST, higher education institutions are better positioned to design curricula, governance structures, and learning experiences that form graduates who are not only AI-competent but morally discerning and socially responsible (Francis, 2015; PCJP, 2004).

Altman's emphasis on the relational consequences of AI—"You will still really care about when you're talking to a human" (Altman, 2025)—reinforces CST's insistence on human dignity and the primacy of relationships. This challenges models of higher education that separate technical training from moral formation. By adopting experiential, interdisciplinary, reflective, participatory, and applied pedagogies grounded in CST, Catholic higher education can respond faithfully and creatively to AI's challenges. In doing so, institutions reaffirm their mission to educate graduates who can innovate responsibly, govern ethically, and serve the common good in an increasingly AI-mediated world.

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