Theory of Knowledge Essay

May 2025

Word count: 1599

IB Candidate Code: lsh546

Prescribed Title 3:

How can we reconcile the relentless drive to pursue knowledge with the finite resources we have available? Discuss with reference to the natural sciences and one other area of knowledge.

This question provokes a thoughtful exploration of how our apparently limitless desire for knowledge must reconcile with the realities of finite resource limitations. It asks how different Areas of Knowledge should handle this tension. To address this question, it is essential to define its key terms. First, "reconciliation" can refer to three possible states: (a) competing demands and interests can coexist, (b) one demand takes over the other competing demands, and (c) competing demands produce other processes or results. Secondly, the "relentless drive" refers to humanity's intrinsic desire to gain knowledge. In the Natural Sciences, this drive might refer to technological innovations, while in the Arts, it might be expressed by creativity. Finally, "finite resources" might refer to limited physical, economic, temporal, ethical, or human assets available, constraining knowledge production and varying by AoK. This essay will explore how reconciliation between the relentless pursuit of knowledge and finite resources can be achieved through two AoKs: Natural Sciences and the Arts. In the Natural Sciences, it consists of prioritising knowledge production determined by ethical frameworks, while in the Arts, it consists of using creativity to transform limitations into opportunities. The discussion will evaluate these approaches by leveraging the definitions given in the introduction.

Humanity's relentless drive to pursue knowledge with our available finite resources can be reconciled through a utilitarian approach. Utilitarianism, introduced by thinkers such as Jeremy Bentham and John Stuart Mill, focuses on "the greatest amount of good for the greatest number" (Driver, 2014). Therefore, if utilitarianism is followed, finite resources should be allocated to resource-efficient projects with the broadest impact.

Furthermore, according to Amartya Sen, "*it is possible to distinguish between utilities of different types or arising from different activities*" (Sen, 1980). This flexibility in the definition of utility allows utilitarianism to adapt across different contexts, making it particularly useful for addressing knowledge-resource tensions.

The global COVID-19 pandemic demonstrates the application of utilitarian principles in practice. Governments and organisations prioritised vaccine development, exemplifying the use of biological and chemical knowledge, more generally Natural Sciences, to achieve "the greatest good for the greatest number". For example, the US government invested approximately $31.9 billion in research supporting mRNA COVID-19 vaccines, with $337 million allocated before the pandemic (Van Beusekom, 2023). Governments and organisations reallocated limited resources, such as funding, medical personnel, and manufacturing capacity, from other healthcare areas to focus on vaccines (WHO, 2020). This resulted in the production of over 11 billion vaccine doses in 2021 but also delayed progress in addressing significant diseases like cancer and tuberculosis (Rougerie, 2024). Although this shift slowed other research, it

ultimately saved far more lives, highlighting the impact of utilitarian resource allocation. This relentless pursuit of knowledge included decoding SRAS-CoV-2's structure and creating effective vaccines. Furthermore, the focus on COVID-19 led to trade-offs, such as a decline in non-COVID-19 research publications and a drop in clinical trial publications (Emmanuel et al., 2020). From a utilitarian perspective, prioritising collective well-being justified these decisions, though global vaccine inequities revealed challenges in achieving a true universal good.

Despite its strengths, the utilitarian approach faces ethical and practical challenges. Critics argue that it often overlooks less tangible values, such as cultural preservation or intrinsic ethical responsibilities, which cannot be easily measured purely in terms of societal benefit (Quinn, 2021; Green, 2019). Deontological ethics, mainly developed by Immanuel Kant, provides a contrasting perspective by focusing on the inherent rightness or wrongness of an action rather than its consequences. This framework argues that ethical boundaries must be respected even when this limits resource efficiency (Alexander & Moore, 2007; Wonnell, 2011).

From a deontological standpoint, the pandemic response would be judged not by its overall benefits but by whether it adhered to the duty to treat everyone equally. In this view, reallocating resources solely toward vaccine development and deprioritising research on other critical diseases could be critiqued as failing to maintain the moral obligation to care for all patients equally. For instance, during the COVID-19 emergency in Italy, a survey of surgical oncology units revealed that hospitals experienced roughly a 50% reduction in available beds and surgical activity, with oncological surgeries in regions like Lombardy dropping from 3.9 to just 2 procedures per week, significantly delaying cancer treatments (Guido Torzilli et al., 2020). From a deontological perspective, such delays fail to hold ethical obligations, underscoring that reconciling the relentless drive for knowledge with finite resources must also ensure that ethical duties to everyone are not compromised.

However, ethical idealism may not be ideal to reconcile our relentless drive to pursue knowledge with the finite resources available. As discussed before, ethical frameworks, such as utilitarianism, seek to reconcile the drive to pursue knowledge with finite resources by prioritising specific areas. But does this approach actually achieve reconciliation? Although it meets definition (b) by prioritising one demand over another, it neglects coexistence (a) and synergy (c), as prioritising the pursuit of knowledge in one area over another can damage the other pursuit of knowledge.

Moreover, there is an inevitable pursuit of knowledge in non-prioritised areas due to motivations other than utilitarian or deontologist, such as cultural, historical, or economic. Weakening the effectiveness of prioritisation as a reconciliation approach.

Instead, reconciliation must be seen as a dynamic, iterative process. A hybrid approach that combines the utilitarian focus on broad societal benefits with deontological protections for individual rights could better balance competing demands. This means constantly reviewing priorities in response to changing situations and ensuring that resources are allocated in a way that not only maximises benefits but also respects ethical obligations to all.

In the AoK of Arts, the reconciliation of the relentless drive to pursue knowledge with our available finite resources can be obtained through artistic innovation, proposing that limitations of finite resources, such as a limited palette of colors, time, or finance, often stimulate creativity in the Arts. These constraints frequently drive the development of new methods, forms, and knowledge (Abbasi, 2024). Although this approach may seem counter-intuitive, this adaptability allows artists to convert limitations into opportunities rather than halting artistic knowledge, ensuring the pursuit of knowledge continues despite constraints. A key characteristic of the Arts is probably the possibility of creative flexibility (Taylor, 2024), which is a prime example of how artists respond to limitations by utilising them as sources of new knowledge. Thus, reconciliation is achieved by developing either the methodology or the product of artistic research.

An example of artistic innovation is evident in the Dada movement, which emerged in 1916 by Hugo Ball in the aftermath of World War I, a period marked by severe shortages of traditional art materials, limited funding, and widespread cultural disruption (MoMA, n.d.; Tate, 2017). This approach to finite resources inspired methods like collages and readymades, in which ordinary objects were transformed into art, such as Marcel Duschamp's “Fountain”, which raised important questions on what makes art art (Hopkins, 2004; Artland Magazine, 2017). This approach bypassed the scarcity of conventional materials and challenged established artistic norms by prioritising ideas and conceptual critique over material quality. The movement demonstrated that innovation can flourish even under material constraints, directly reconciling the relentless drive for artistic knowledge with the limited resources available.

While artistic innovation can reconcile the relentless drive to pursue knowledge in the Arts with finite resources to the extent that moderate constraints spur creativity, severe limitations can stifle this potential. For example, between 2014 and 2018, Oklahoma schools ended 1110 fine art classes during budget cuts, leaving nearly 30 percent of public school students without access to arts education (Wendler, 2019). Unlike the Dada movement, which transformed manageable resource scarcity into a creative catalyst, extreme shortages of materials, funding, and time hinder artists from fully exploring their vision. To reconcile these challenges, it is crucial to implement policies that secure a baseline level of support for

the arts, ensuring that even under constrained conditions, artists can innovate and expand their creative knowledge.

The claim proposes that the reconciliation between the relentless drive to pursue knowledge and finite resources in the Arts is achieved through innovation. Linking this to the multi-factor definition of reconciliation, there are some issues. Although artistic innovation, as seen in movements like Dada, allows artists to explore new genres and techniques under material constraints (hinting at coexistence in definition a), it often shifts focus entirely from the original pursuit of knowledge in the Arts. In other words, instead of balancing competing demands, this innovation may replace the original knowledge with alternative forms, failing to meet the criteria for both coexistence (a) and the synergistic production of new processes (c). Thus, while innovative approaches can generate new artistic expressions, they sometimes fall short of genuinely reconciling the tension, as they transform the original pursuit rather than balancing it alongside finite resources.

Reconciliation between the relentless pursuit of knowledge and finite resources is a dynamic process rather than a fixed solution. In the Natural Sciences, prioritization through utilitarian ethics maximizes societal benefit but raises ethical concerns, as seen in COVID-19 vaccine development. Meanwhile, the Arts reconcile limitations through creative adaptation, as demonstrated by Dadaism, though this often shifts rather than balances knowledge production.

Ultimately, true reconciliation may not be about eliminating the conflict between knowledge pursuit and finite resources, but rather about managing and adapting to it. A hybrid approach, integrating prioritization, ethical responsibility, and creative flexibility, may provide a more sustainable way forward. The evolving nature of knowledge ensures that this balance remains in constant negotiation, requiring continuous reassessment of how resources are allocated and how knowledge is pursued.

Bibliography

Abbasi, B. (2024, April 15). *"Unlocking Creativity: Embracing Constraints as Catalysts for Innovation."* Medium. https://medium.com/@basitabbasi1851/unlocking-creativity-embracing-constraints-as-catalysts-for-innovation-2eaf7b7ada7b

Alexander, L., & Moore, M. (2007, October 30). *Deontological Ethics*. Stanford Encyclopedia of Philosophy. https://plato.stanford.edu/entries/ethics-deontological/

Artland Magazine. (2017, November 13). *What is Dadaism, Dada art, or a Dadaist?* Artland Magazine. https://magazine.artland.com/what-is-dadaism/

Driver, J. (2014, September 22). *The History of Utilitarianism*. Stanford Encyclopedia of Philosophy; Stanford University. https://plato.stanford.edu/entries/utilitarianism-history/

Emanuel, E. J., Persad, G., Upshur, R., Thome, B., Parker, M., Glickman, A., Zhang, C., Boyle, C., Smith, M., & Phillips, J. P. (2020). Fair Allocation of Scarce Medical Resources in the Time of Covid-19. *New England Journal of Medicine*, *382*(21), 2049–2055. https://doi.org/10.1056/nejmsb2005114

Green, M. (2019, February 23). *Utilitarianism and Integrity*. Carneades.pomona.edu. https://carneades.pomona.edu/2019-Ethics/08.WilliamsUtilitarianism.html

Guido Torzilli, Luca Viganò, Jacopo Galvanin, Castoro, C., Vittorio Quagliuolo, Spinelli, A., Alessandro Zerbi, Matteo Donadon, & Montorsi, M. (2020). *A Snapshot of Elective Oncological Surgery in Italy During COVID-19 Emergency*. *272*(2), e112–e117. https://doi.org/10.1097/sla.0000000000004081

Hopkins, D. (2004). *Dada and Surrealism: A Very Short Introduction*. Oxford University Press.

MoMA. (n.d.). *Dada | MoMA*. The Museum of Modern Art. https://www.moma.org/collection/terms/dada/a-catalyst-for-creativity

Quinn, M. (2021). Bentham on Utility and Cultural Value. *Revue d'Études Benthamiennes*, *20*. https://doi.org/10.4000/etudes-benthamiennes.9202

Rougerie, P. (2024, December 11). *COVID-19 vaccine manufacturers produced more than 11 billion doses in 2021 - Science Feedback*. Science Feedback. https://science.feedback.org/review/covid19-vaccine-manufacturers-produced-more-than-11-billion-doses-in-2021/

Sen, A. (1980). Plural Utility. *Proceedings of the Aristotelian Society*, *81*, 193–215. https://www.jstor.org/stable/4544973

Tate. (2017). *Dada*. Tate. https://www.tate.org.uk/art/art-terms/d/dada

Taylor, S. (2024, March 14). *The Power of Creative Limitations - Brave People /Tribe - Medium*. Medium; Brave People /Tribe. https://medium.com/brave-people/the-power-of-creative-limitations-854e62d9f004

Van Beusekom, M. (2023, March 2). *35 years of US investment in research led to development of mRNA COVID vaccines | CIDRAP*. Www.cidrap.umn.edu. https://www.cidrap.umn.edu/covid-19/35-years-us-investment-research-led-development-mrna-covid-vaccines

Wendler, E. (2019, January 18). *Decline In Oklahoma School Arts Programs Follows Funding Drop, But Cuts Aren't Equally Felt*. KOSU. https://www.kosu.org/show/stateimpact-oklahoma/2019-01-18/decline-in-oklahoma-school-arts-programs-follows-funding-drop-but-cuts-arent-equally-felt

WHO. (2020, May 20). *Coronavirus disease (COVID-19): Ethics, resource allocation and priority setting*. Www.who.int. https://www.who.int/news-room/questions-and-answers/item/coronavirus-disease-covid-19-ethics-resource-allocation-and-priority-setting

Wonnell, C. T. (2011). DEONTOLOGY, THRESHOLDS, AND EFFICIENCY. *Legal Theory*, *17*(4), 301–317. https://doi.org/10.1017/s1352325211000176