

# IB TOK ESSAY SAMPLE



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## TITLE

TO WHAT EXTENT DO YOU AGREE THAT HOWEVER, THE  
METHODS OF AN AREA OF KNOWLEDGE CHANGE, THE  
SCOPE REMAINS THE SAME?

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**To what extent do you agree that however, the methods of an area of knowledge change, the scope remains the same. Answer with reference to natural science and art.**

Our means of learning and developing knowledge may drastically change, but the motivations behind our ventures often remain the same. This leaves a critical question: just because the ways of acquiring knowledge change, does the scope of what it pursues in trying to understand at large remain the same?

Implementing changes in tools, technologies, and theories, especially in areas such as natural science and the arts, the methods of exploring the world and communicating continue to evolve. However, on the subsurface level, mainstream aims tend to remain stuck in the past. Natural science continues to pursue and discover truths about the physical world, and the arts persevere in their exploration of human experience, emotion, and meaning. Yet one might come to believe that if approaches are becoming radically novel, then the domain itself has started to mutate, finding itself wandering much beyond where it had previously been envisaged.

This essay argues that in any area of knowledge, such as natural science or art, the methods undergo continuous transformation, but the definition of scope remains essentially unchanged.

#### **Natural science:**

There is a claim in natural science that, as much as approaches in natural sciences may vary extensively as a result of novel methodologies, designs, or models, the context under which they have to operate normally does not change: to comprehend, decipher, and forecast the natural world. This claim is primarily attributed to reasons and empirical observations that have remained the locus of ways of knowing within the scientific community.

It is possible to consider the example of paleogenetics<sup>1</sup>, a relatively new scientific field that studies ancient DNA to extract knowledge about ancient populations. Understanding of human

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<sup>1</sup> Gaeta, R. (2021) 'Ancient DNA and paleogenetics: risks and potentiality', *Pathologica*, 113(2), pp. 141–146. doi:10.32074/1591-951X-146

origins. In the past, researchers depended mainly on physical anthropology (the study of skeletal remains, artifacts, and burials). These approaches were highly functional, despite being restricted, especially in the discovery of intricate genetic associations. Researchers such as Dr. Svante Pääbo, in turn, changed the field by establishing DNA-sequencing technology that held the power to retrieve ancient bones and reveal their genetic information. His research has helped researchers to define that modern man interbred with Neanderthals, a fact that would not have been proven by physical evidence. Despite the changing way of measuring bones to the measurement of base pairs of DNA, the scope remained the same: further to confound our knowledge of human ancestry and biological evolution. This case shows that even the most radical shifts of methodology do not necessarily occasion any shift of scope, but rather tend to increase the precision and scope in which prior aims of science are effected.

Conversely, there are times when methodological advances go beyond clarifying extant purposes; they provoke new questions that were inconceivable before, so enlarge or change the nature of natural science as a whole. Such moments can be seen as a paradigm shift, which is also related to a concept in TOK that refers to profound alterations in the fundamental assumptions or practices of a field. When new instruments or models open up completely new areas of investigation, the boundaries of what science seeks to know can shift in unexpected ways.

The best example one can give is the advent of the astrobiology area<sup>2</sup>, which was barely considered 50 years ago. The discovery of spectroscopy, the use of satellites to take photographs, and robot missions to space have helped scientists start investigating the chemical compositions of other planets in the universe and recreate some of their conditions in labs. Earlier, these queries about extraterrestrial life were often dismissed as purely

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<sup>2</sup> University of Washington Astrobiology Program, (no date) What is astrobiology?. Available at: <https://depts.washington.edu/astrobio/wordpress/about-us/what-is-astrobiology/> (Accessed: 19 June 2025).

philosophical or relegated to science fiction. Using the new techniques, however, scientists were able to put these kinds of questions to the scientific test: What does it take to sustain life outside of Earth? Do exoplanets contain biosignatures in their atmosphere? Missions, such as the NASA Perseverance rover, which currently traverses the Martian soil in search of microbial indicators, are indicative of a drastic change. Science has grown to the point of getting a grasp of life on Earth, only to consider now whether there is life in other parts of the universe. New approaches did not simply make things more precise; they placed new limits on what could be known scientifically and what could be known at all.

There is a dynamic between method and scope in natural sciences. Although a disciplinary purpose involves exploring and explaining the natural world, new approaches to a subject will frequently approach a frontier where there is no clear distinction between what can be termed as revising what is known, and what can be defined as the uncovering of a whole new territory of study. The ability of scientists to answer brand-new questions, questions that had never had an answer before, can expand the scope of a field when a technique enables such questioning. But in many of these instances, there is science that evolves, such as that in paleogenetics, that proves more profound knowledge to be brought out in long-term set objectives.

**Art:**

The method of the arts goes with the current advances in technology and materials, but will remain intact for the most part, that is, the main objective of the expression of and exploration into the human condition. Whether through paint, performance, or digital code, artists have, throughout the ages, continued to engage in self-inquiry, reflection, and the expression of what comes from them personally and from their cultures and emotions. Their grounds are emotion, imagination, and aesthetic judgment as the primary modes of knowing in the arts.

A powerful example of this is the work of Bisa Butler<sup>3</sup>, an American artist renowned for her life-size portraits crafted from vibrant African textiles. Butler's mode was in stark contrast to traditional methods of portraiture, such as oil on canvas. However, with her artistic aim, she aligns with the long-standing scope of the visual arts, which involves paying homage to identity, transgressing representation, and preserving narratives. Such quilts that she creates pay homage to the worthy historical Black figures and everyday African American life. They're also imbued with themes such as memory, Community, and Dignity. Indeed, while this material and technical layered fabric, without paint or pencil, may seem opposed to other things, it is entirely consistent with the classical aims of portraiture: to glorify the subject and elicit emotional and cultural truths. Therefore, although her method innovates, the knowledge pursued through this work is deeply tied to that purpose in art that has endured across time.

With that said, not all methodological revolutions in the arts are phenomenological enough that they will change what art does. Here, the neologistic tool or platform will transform art from a mode of private expression to a system of public interaction or data-driven storytelling. This, in turn, augments or even transforms its aims from conveying aesthetic experience to facilitating intricate, experiential knowledge.

A prime case in point is the project "The Next Rembrandt" (2016)<sup>4</sup>, where a team of data scientists, engineers, and art historians has been analyzing Rembrandt's entire oeuvre using machine learning capabilities to create an entirely new "Rembrandt" painting. The result was neither touched by human hand nor influenced worldwide, but rather an outcome of algorithms, facial recognition, and 3D printing.

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<sup>3</sup> Bisa Butler Art (no date) About Bisa Butler. Available at: <https://www.bisabutler.com/about-5> (Accessed: 19 June 2025).

<sup>4</sup> Microsoft News Center Europe (2016) The Next Rembrandt: Blurring the Lines Between Art, Technology and Emotion. Available at: <https://news.microsoft.com/europe/features/next-rembrandt/> (Accessed: 19 June 2025).

This method of the project involved empirical data analysis, as opposed to employing intuitive or creative processes. It also shifted away from the traditional realm of art-making; rather than art viewed as an artist expressing personal vision or documenting lived experience, the project sought to test a computer's ability to imitate certain creative paths. The knowledge generated here is epistemologically anomalous, unsettles our concepts of authorship, originality, and even art-making itself. In this way, the project reorients the arts as a site of reflection and testing for artificial creativity. This site has since expanded beyond its original focus on a human-centered narrative.

The arts exist within a paradigm of fluid interplay between method and scope. Sometimes, these methods extend existing artistic goals, as in the case of Butler's fabrics, which communicate ancient stories of identity. In other contexts, data-generated visual art becomes a method whereby intention and impact intersect, allowing the arts to enter otherwise unexplored epistemic spaces. While the scope frequently holds steady, especially when grounded in emotion or cultural narrative, rapid advances in technology can stretch the borders of what the arts seek to explore and who, or what, does the exploring.

### **Conclusion:**

In both the natural sciences and the arts, the evolving relationship between method and scope illustrates how human knowledge continually navigates the tension between tradition and innovation. Scientific breakthroughs such as DNA sequencing or robotic exploration can bring new tools with greater power. Still, the underlying aspiration to explain and predict the natural world remains a constant compass. Likewise, painters exchange oils for canvas or codes, but the drive to reflect, challenge, and convey meaning still centers the reach of their work. These consistencies underscore how fundamental modes of knowing, such as reason, emotion, and imagination, underlie each field, even as their expression varies.

But it would be restrictive to say that the scope never shifts. When techniques unlock entirely new questions in the case of astrobiology's cosmic quests or artificial intelligence's incursion into creative scope, the scope can warp, stretch, or indeed morph. In these moments, both art and science step into new territories, pushing the limits of what is seen as valid knowledge. Paradigm shifts, both subtle and sweeping, remind us that scope is not rigid and is shaped by the questions we dare to ask and the tools we have to ask them.

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