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The Eternal Rafael

By Giulia Tumolillo, Chiara Massaro, Andrea De Angelis and Marco Luigi Ruscillo (Liceo M.T. Varrone, 5AL)

In professional sports, injuries are an unavoidable and often decisive aspect of an athlete's career. Physical exertion, psychological pressure, intense training sessions, and constant strain on muscles and joints push the human body to its limits at every level of competition.

In many cases, an injury can lead to a temporary setback, but in more severe cases, it can compromise entire seasons or even bring a career to an end.

One of the most emblematic examples of an athlete who has managed to live with injuries and still reach the pinnacle of success is the Spanish tennis player Rafael Nadal, widely regarded as one of the greatest in tennis history. His career perfectly balances legendary victories and a relentless battle against a long series of physical issues that have often kept him off the courts.



Rafael Nadal turned professional in 2001 and, even as a young player, displayed extraordinary physical strength and an intense style of play. His aggressive approach, based on long rallies, rapid changes in direction, and heavy top-spin, has taken a toll on his body over time.

One of the most serious and debilitating conditions Nadal has faced is Müller-Weiss syndrome, a rare degenerative disease affecting the navicular bone in his left foot. This condition causes chronic pain, inflammation, and difficulty moving, especially problematic in a sport like tennis, where footwork is essential. Nadal has suffered from this syndrome for years, forcing him to modify his tournament schedule, withdraw from major events, and sometimes play through severe pain.



In 2021 and 2022, the pain in his foot became so intense that he even considered retiring. However, thanks to innovative treatments, including pulsed radiofrequency therapy on the foot's nerve, he returned to the court and remarkably won the 2022 French Open, his 14th title at Roland Garros, an achievement many thought impossible given his physical condition.

His greatest demonstration of resilience and determination is surely the victory at the Australian Open in 2022.

January 30, 2022. A day that will be remembered forever. After six months of absence from the circuit, Rafael Nadal won the tournament due to a foot injury and positivity for COVID-19. The game starts with absolute dominance from his opponent, Daniil Medvedev. The match began as expected, with Nadal attempting to disrupt Medvedev's rhythm. However, the Russian played flawlessly and claimed the second set during high tension for both players, who alternated between brilliant shots and uncharacteristic errors. Rafa had established a two-break advantage in that second set and served at 5-3 but faced a brutal challenge.

When everything seemed to deteriorate for Nadal, a few significant mistakes from Daniil rekindled the Spaniard's confidence. Standing at the precipice of defeat with 0-40 in the sixth game, *Nadal reclaimed his dominant form*. Medvedev's clarity dissipated as he attempted ill-advised drop shots and tried unsuccessfully to shorten rallies.

Rafael returned with the correct grit during the third set to turn the match's tide completely. Nadal immediately found himself down 0-30 and fought desperately to save the game through some acrobatic shots, but Medvedev secured three consecutive break points thanks to a skipping backhand. Nadal's plan for this game did not include surrender. The challenge in the fourth set was more and more a battle of nerves and physicality. The games always proved to be one of suffering for the serving player.

In the fifth set, the start was immediately aggressive from the Spaniard, who had cracked the code needed to unsettle the Russian, striking again when he ventured to the net. Medvedev's serve saved the first break point of the decisive set, keeping his hopes alive a little longer. The long rallies, which had gone Daniil's way early on, were now Nadal's hunting ground. It felt like only the Russian's first serve kept him afloat, as his energy reserves dwindled. At 2-all, Medvedev failed to land a first serve while facing break point on the ad side. On the eighth shot of the rally, Rafa unleashed a vintage down-the-line forehand winner—classic Nadal, now seemingly free of the tension that earlier had kept his swings in check.

The Russian's shots, meanwhile, had lost their sting. Still, the 25-year-old Muscovite dug deep into a hidden fuel tank, winning unexpected points and putting Nadal under pressure as he tried to consolidate his lead. The tiger-like focus in Medvedev's eyes was causing some doubt to creep back into Rafa's forehand, but the Manacor legend held his nerve, saving three break points with wide-angled slices and moving within two games of a historic win. The match settled into a tense rhythm, awaiting the moment of truth, at 5-4, just before Medvedev had his legs massaged. But no massage could work miracles.

Nadal moved him around the court mercilessly to go up 30-0. Still, a final game like this could never go by without drama: a forehand unforced error and a double fault gave the world No. 2 a lifeline, earning him a breakpoint at 30-40, after a time violation warning and a missed backhand by Nadal. Suddenly, everything was back in the air—but it was only a Russian illusion. A poorly judged drop shot from Medvedev added to the chaos in his next service game, one he would surely regret. He ended up losing the game, gifting Nadal a second chance to serve for the match (and yes, we're putting that mildly).



[1]

https://www.repubblica.it/sport/tennis/2024/10/10/news/nadal_sindrome_di_muller-weiss_patologia_piede-423547597/

[2] https://www.eurosport.it/tennis/australian-open/2022/australian-open-nadal-scrive-la-storia-del-tennis-rimonta-epica-al-5-set-su-medvedev-e-21-slam_sto8745934/story.shtml

Rafael Nadal's mentality is defined by relentless determination and an unwavering commitment to every point. He approaches tennis with extraordinary mental fortitude, seeing challenges as opportunities rather than obstacles. His "never say die" attitude has become legendary in the sport.

His humility despite immense success shows his grounded perspective - he celebrates victories briefly before refocusing on improvement. Perhaps most distinctive is Nadal's ability to embrace discomfort. He thrives under pressure, elevating his game in crucial moments. This warrior mentality, combining fierce competitiveness with sportsmanship and respect, has made him a champion and a sporting icon admired worldwide.



[3] <https://www.ubitennis.com/blog/2022/01/30/australian-open-il-capolavoro-di-nadal-medvedev-rimontato-sono-21-i-titoli-slam-dello-spagnolo/>

[4] <https://www.team-tennis.net/metal/rafael-nadal-mental-strength>

Today's Menu

By Edwyn Borrelli, Luca Di Vizio, Angelica Rossi, Arianna Salvatore (Liceo M.T. Varrone, 5AL)

AI, alternative proteins, and innovative farming are changing how we grow, produce, and think about food between progress, ethics, and sustainability.

Technology is changing the way we eat at an incredible pace. Artificial Intelligence (AI), 3D-printed meat, and genetically engineered crops have moved beyond the realm of science fiction—they're now essential tools in addressing major challenges like food security and climate change. In addition, innovative approaches like vertical farming, hydroponics, and soil-free agriculture are providing exciting new ways to sustainably feed our ever-growing population.

AI—software that mimics human decision-making—is shaking up the agriculture world. With the help of drones, sensors, and satellite imagery, AI is paving the way for “precision farming.” This approach allows for constant monitoring of crop health, weather patterns, and soil data, all aimed at boosting yields and minimizing waste (QAD, 2024).

AI is also playing a crucial role in vertical and hydroponic farming—innovative systems that grow food in stacked layers or even without soil, using nutrient-rich water. These techniques help cut down on land use and water consumption, making it possible to produce food in urban areas or dry regions. Plus, AI fine-tunes these environments in real time for optimal growth.

However, embracing this advanced technology often means making significant investments. Many small producers might find themselves left out, and there's a concern that automation could lead to a decline in traditional farming jobs (ThroughPut Inc., 2023).



[1] <https://www.qad.com/blog/benefits-artificial-intelligence-food-manufacturing>

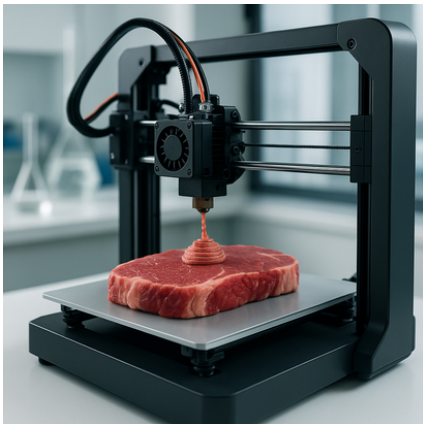
[2] <https://www.throughput.world/blog/ai-in-the-food-industry-2025>

[3] <https://builtin.com/3d-printing/3d-printed-meat>

[4] <https://medium.com/@tanishqaagrawal/3d-printed-meat-future-of-food>

Startups like Novameat and Redefine Meat are stepping up the game by using 3D printing to whip up realistic plant-based meat alternatives (Built In, 2023). This innovation not only helps cut down the environmental impact of livestock farming but also allows for the customization of proteins, vitamins, and fats to meet various dietary needs (Agrawal, 2022).

That said, the production costs are still pretty high, and there are some challenges when it comes to taste and texture. Plus, there's a bit of cultural pushback: just like with edible insects, which are a staple in places like Asia and Africa, Western countries are still warming up to the idea (Ghosh, 2023).



Genetic modification has really changed the game in modern agriculture by enhancing resistance and boosting nutrition. Take Golden Rice, for example—it's packed with vitamin A and plays a crucial role in combating malnutrition in certain regions of Asia (Potrykus, 2022).

However, there are still worries about their environmental effects, the potential for gene transfer, and the influence of corporations. Different countries have different regulations, which highlights the ongoing discussion about safety and ethics in this field. Innovation is transforming every aspect of food production—from the way it's cultivated to how it's processed. However, to make sure these advancements are beneficial for all, we need to blend progress with a sense of responsibility.

Technologies such as AI, genetic engineering, and lab-grown meat present incredible solutions, especially when integrated with unconventional farming methods. Yet, achieving success hinges on inclusive policies, building public trust, and honoring cultural values.

Food has evolved beyond just what's served on our plates—it's now about the journey it takes to get there and the communities it supports.

Cinema

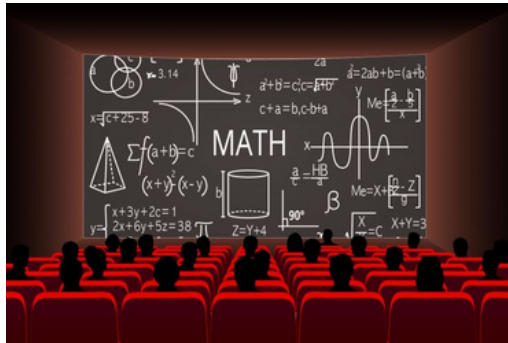
By Alessia Paliotta, Giulia Gollia, Giulia Fionda, Vincenzo Maria Luciano (Liceo M.T. Varrone, 5AL)

Mathematics has always been a powerful tool for filmmakers, whether behind the scenes in

visual effects. Over the years, its presence in cinema has evolved, transforming both the way movies are made and the way they are experienced by audiences. This article explores the fascinating relationship between mathematics and cinema, highlighting its historical development and providing notable examples.

The relationship between mathematics and cinema can be traced back to the very beginnings of film. In the early 20th century, filmmakers began to experiment with mathematical concepts such as symmetry, geometry, and perspective to create visually engaging scenes. Georges Méliès, one of the pioneers of cinema, used basic mathematical principles to achieve the first known special effects. In *A Trip to the Moon* (1902), he used techniques like stop-motion photography and multiple exposures, which required precise timing and calculations to produce seamless transitions and effects.

Mathematics also played a crucial role in the development of cinematography. For instance, in the construction of camera systems, the principles of geometry and trigonometry were employed to control the angles and focus, ensuring sharpness and proper composition. The idea of depth of field—the range of distance that appears in focus in a shot—depends on understanding mathematical concepts of light and optics.



[1][https://www.treccani.it/enciclopedia/georges-melies_\(Enciclopedia-del-Cinema\)/](https://www.treccani.it/enciclopedia/georges-melies_(Enciclopedia-del-Cinema)/)

[2]<https://www.adobe.com/it/creativecloud/animation/discover/cgi-animation.html>

[3]<https://vitolavecchia.altervista.org/cosa-sono-e-differenza-tra-computer-grafica-e-cgi-immagine-generata-al-computer/>

As technology advanced, so did the integration of mathematics in filmmaking, especially with the advent of computer-generated imagery (CGI). In the late 20th century, CGI became a game-changer for the film industry, and mathematics emerged as the driving force behind many visual effects. One of the most notable examples of this is Jurassic Park (1993), directed by Steven Spielberg.

The groundbreaking visual effects used to bring dinosaurs to life were made possible by complex algorithms and mathematical models in the computer programs used to generate realistic textures, movements, and interactions with the environment.

Computer graphics, driven by mathematical algorithms, rely on concepts from linear algebra, calculus, and 3D geometry. These principles allow animators to create simulations of real-world physics, light behavior, and movement, resulting in stunning visuals that were once impossible. For example, rendering an image involves calculating millions of pixels and applying various lighting models to achieve realism, all of which are deeply rooted in mathematical formulas.

In recent years, the use of mathematics in film has continued to evolve, with more films exploring the relationship between math and the universe. One standout example is Interstellar (2014), directed by Christopher Nolan. The film dives into the complex world of astrophysics, black holes, and time dilation, all of which are underpinned by the equations of general relativity. The filmmakers worked closely with physicist Kip Thorne to ensure that the science depicted in the movie was as accurate as possible. The result is a visually stunning and scientifically rich film that brings complex mathematical and physical concepts to the big screen.

The use of mathematics in cinema has come a long way since the early days of film. From basic geometric principles in early visual effects to the integration of complex mathematical algorithms in CGI and narrative-driven films about mathematics, the relationship between math and film has become deeply intertwined. Whether it's helping create awe-inspiring visuals or shaping the plot of a movie, mathematics continues to be a key ingredient in the magic of cinema.

Mind Beats

By Nicolò Manconi, Annamaria Miranda, Italia Moscatiello, Melissa Leonardi
(Liceo M.T. Varrone, 5AL)

Studying with background music is an increasingly common habit among teenagers. Many high school students put on their headphones as soon as they open their books, convinced that music can help them concentrate better. But is music truly helpful for learning, or does it risk becoming a distraction? And what does science say? In this article, we analyze data and research on the impact of music on studying, with a look primarily at its benefits. We also give voice to the students themselves through an interview with class 5A of the Linguistic High School Varrone in Cassino to understand how and why they use (or avoid) music while doing homework. Reliable sources—from educational portals to studies—help us clarify this widely debated topic.

Anyone walking into a school library or a teenager's room in the afternoon will likely see the same scene: open books, notebooks on the table, and, inevitably, headphones in their ears. Listening to music while studying has become almost the norm for many students. This is not just anecdotal: various surveys confirm this trend. For example, a recent study conducted on 2,000 people by Colorado State University revealed that three out of four individuals claim that listening to music while studying helps them memorize better. In the same sample, 84% of respondents achieved high school performance.

One finding in particular stands out: younger students benefit the most from music during learning. The same study shows that students who habitually wear headphones are able to maintain concentration for longer and achieve higher grades compared to those who study in silence.



[1]Colorado State University & OnePoll (2023)

[2]Emma Gray, Clinical Psychologist (for Spotify UK)

[3]Dyndevice (DynDevice LMS – eLearning platform)

[4]Skuola.net

[5]Corriere della Sera – Education Section

The widespread belief among students finds partial support in scientific studies. Can background music really improve cognitive performance? Researchers have attempted to answer this, and so far, the results are encouraging. Some studies suggest that music, especially if carefully selected, can stimulate the brain to function better. For example, a British study commissioned by Spotify found that listening to songs with a tempo between 50 and 80 beats per minute induces a more focused and productive mental state, ideal for learning and studying.

Slower, regular tracks are said to help with concentration. Even in traditional academic circles, promising indications have emerged. The OnePoll survey mentioned earlier concludes that those who listen to music while studying tend to achieve better grades and remain focused for longer. The results outlined a kind of ranking of study-friendly music: at the top is classical music, considered the most beneficial by 31% of respondents, followed closely by Rhythm & Blues and country (both at 28%). Next in line are classic rock (26%), gospel (25%), and jazz (23%). Further down are hip hop (23%), pop (21%), and instrumental soundtracks (21%).

It is natural to wonder why music can have a positive impact on studying. The explanations vary and primarily concern music's effects on our brains and emotional states. First of all, listening to pleasant tracks reduces stress and performance anxiety. As noted in an article published on Orizzonte Insegnanti, music has been shown to reduce stress and improve concentration, contributing to overall well-being. A less stressed, calmer student in front of their books will therefore have a freer mind to absorb new information.

Another key benefit of music is its ability to isolate from external noise. Many students say they wear headphones not to actively listen to the song, but to create a sort of "bubble" and avoid being distracted by what is happening around them. In otherwise noisy environments, music becomes an ally to carve out a focused space.

From a cognitive perspective, some theories suggest that music activates multiple brain areas in synergy. Stimulating both the left hemisphere (logic, language) and the right (creativity, emotions), it may facilitate idea association and memory retention. Not surprisingly, in education, the term "Mozart effect" is used to describe the observation that listening to classical music seems to temporarily improve certain mental performances.

Finally, there is the motivational and emotional aspect. The right music can energize or maintain a positive mood. A relaxing playlist can turn an afternoon of studying into an almost pleasant experience. Digital education experts note that incorporating musical elements into a learning context increases emotional engagement.

To better understand the relationship between music and studying from the students' perspective, we conducted an interview with 21 high school boys and girls.

Music use is widespread even in this small sample. Out of 21 students interviewed, 15 said they always play background music during individual study sessions. Another four reported listening to music only occasionally. Only two out of 21 said they completely avoid music.

Why do so many students love studying with music? The reasons given align with expert hypotheses. About 14 out of 21 said music helps them focus by shielding them from

external distractions: "If I do not have some music in my headphones, I get lost in the house noises and end up getting distracted more," said Marco, 17, noting how music acts as a barrier against environmental noise. About half the sample (around ten students) emphasized its effect on mood and stress: "When I study with my favorite playlist, I feel more relaxed, the anxiety goes down, and time flies by," said Giulia, 18, who uses music to ease exam preparation. Others added that it improves their mood: "If I have to spend two hours with my books, at least I enjoy some good songs—so I do not go crazy and associate studying with something positive," added Nicolò, 18. Their words suggest that music often serves both an emotional and cognitive support role, keeping boredom and tension at bay.

Some minor caveats do exist. Several students admitted that sometimes music can interfere. Some prefer to turn it off during more complex subjects, while others select only instrumental or relaxing playlists to avoid distraction.

In conclusion, these high schoolers' voices offer a balanced picture: music is mostly seen as a helpful tool, though used with a bit of caution. Some would not study without it, while others use it sparingly depending on the task.

Listening to music while studying can be a valuable ally, depending on the situation. On one hand, data and testimonials suggest that a good musical background can improve mood, reduce stress, and even enhance memory and concentration in many students.

So what is the advice for students, parents, and teachers? First, know yourself. Second, choose wisely what to listen to. Finally, practice moderation: keep the volume low and take breaks. In short, there is no universal rule that works for everyone. The important thing is to find your own balance. As we have seen, the study soundtrack can become a powerful ally for success—provided it is managed with common sense.



The Economic History Of The Silk Road

By Tharushi Sanjali Leelaratne

“The Silk Road”, which is known as the first global trade route in history used by traders for over 1,500 years, has an importance far greater than the simple exchange of goods as it played a significant role in facilitating economic, cultural, political, and religious connections between eastern and western worlds.

The Silk Road wasn't a single road or route but a network of various paths used by traders for over 1,500 years. Trade on these routes started in 130 B.C.E when the Han dynasty in China opened its doors, and it continued until 1453 C.E. when the Ottoman Empire stopped trade with the West. The term “Silk Road” was first used by German Geographer Ferdinand Von Richthofen in 1877 to describe these busy trade routes between Europe and East Asia. This name also represents the exchange of goods and ideas among different cultures. Some historians believe that the term “Silk Rotes” is better at showing traders 'many paths. Stretching about 6,437 kilometers (4,000 miles), the Silk Road crossed some of the world's toughest landscapes, like the Gobi Desert and Pamir mountains. This network moved mountains and shared cultures and knowledge, connecting many civilisations. The roads were often in poor condition, and robbers were common. Traders traveled in caravans with camels or other packed animals to protect themselves.

The Silk Road was a bustling network of trade routes that facilitated the exchange of various goods between the East & West. The diverse range of commodities traded along these routes significantly shaped the cultures and economies of the regions connected by the Silk Road. Silk was one of the primary goods traded from East to West along the Silk Road. In China, silk was valued for its beauty, strength, and weight. Besides silk, other textiles such as wool, cotton and linen also traveled these routes, contributing to a rich exchange of textile crafts and designs. Apart from silk, “spices” were another significant category of goods traded on the Silk Road, from South and Southeast Asia. Spices such as cinnamon, cloves, nutmeg and pepper were transported over long distances to reach European markets and were highly prized in Europe. Various foods and agricultural products were traded alongside spices, including grains, fruits, and nuts.

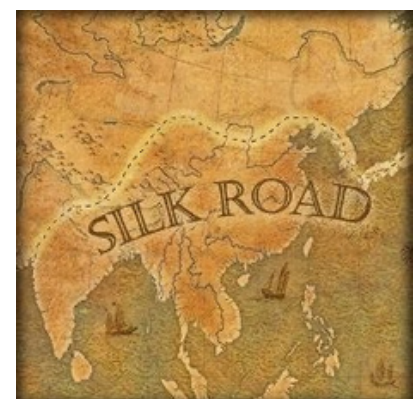


Moreover, the Silk Road was also a conduit for exchanging luxury goods and advanced technologies. Gemstones, gold, silver, and other precious materials were traded and were often used to craft intricate jewelry and art objects. Additionally, the Silk Road facilitated the spread of significant technological innovations. Gunpowder, another Chinese innovation, fundamentally changed welfare in Europe and beyond.

The Silk Road played a crucial role in the economic prosperity of major trading regions such as China, Central Asia, and the Middle East. The trade of high-value goods, including silk, spices, and luxury items, generated substantial wealth. Chinese merchants benefited from the high demand for silk in Europe, which provided significant revenue to the Chinese economy. Central Asian traders, positioned as intermediaries, facilitated the exchange of goods between the East and West, bringing prosperity to cities along the trade routes. In the Middle East, trading hubs like Baghdad and Damascus thrived as centers of commerce, contributing to the region's economic vitality.

The wealth from the Silk Road trade spurred the growth of urban centers like Samarkand, Bukhara and Kashgar, transforming them into bustling economic and cultural hubs. These cities expanded to accommodate the influx of merchants, artisans, and travelers, increasing urbanization. Markets, grand buildings, and diverse communities emerged, making these urban centers vibrant and prosperous. Additionally, The Silk Roads's extensive trade networks led to the development of robust infrastructure, including caravanserais, ports and market towns, which ensured safe, efficient trade and enhanced connectivity between regions, fostering an integrated economic landscape.

However, several factors contributed to the decline of the Silk Road. A primary reason was the rise of maritime trade routes during the age of exploration, which referred to faster, safer, and more cost-effective means of transporting goods between East and West, gradually overshadowing the overland routes. Political instability along the Silk Road, such as the fall of the Mongol Empire and the emergence of hostile states, made travel and trade increasingly dangerous and unpredictable. The final blow came in 1453 C.E. when the Ottoman Empire closed off trade routes to the West. All these factors mentioned above led to the gradual decline and eventual disuse of the once-thriving network of trade routes.



[1]The importance of trade routes in bilateral trade - Trade Routes: Connecting Nations for Enhanced Bilateral Trade. (s.d.). FasterCapital.<https://fastercapital.com/topics/the-importance-of-trade-routes-in-bilateral-trade.html>

[2]Kim, T., Lim, J., & Lim, J. (2023). Developing an Intelligent Recommendation System for Non-Information and Communications Technology Major University Students. *Applied Sciences*, 13(23), 12774.

Despite the decline, the Silk Road impacted later trade routes and the modern economic system. It pioneered long-distance trade, cultural exchange, and economic interdependencies, influencing new trade networks, including dominant maritime routes. These exchanges of goods, technologies and ideas laid the foundation for modern international trade and globalization.

On the other hand, the cultural and historical legacy of the Silk Road is profound. It facilitated the exchange of religions, philosophies, and artistic traditions, significantly shaping the cultures of the regions it connected. The spread of Buddhism from India to China, the exchange of scientific knowledge, and the blending of artistic styles are just a few examples of its cultural impact.

Today, the Silk Road is celebrated for shaping global history, with parts recognized as UNESCO World Heritage sites, preserving its memory and significance in international cultural exchange.



3]Reforming and enlarging NATO. (1996). *Strategic Survey*, 97(1), 110–120.

<https://doi.org/10.1080/04597239608461037>

[4]China Archives the Mysterious India.

<https://www.themysteriousindia.net/tag/china/>

The Role Of AI In Shaping The Global Economy

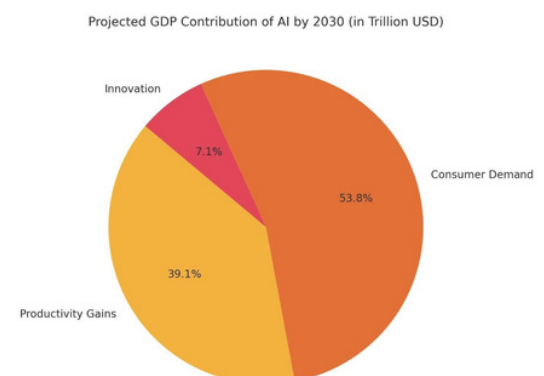
By Khanim Aliyarova

AI is transforming industries, raising productivity, and reshaping economies but with challenges such as job loss, ethical concerns, and economic inequality.

In the last few years, AI has become a more important subject in the world, especially in Economics. Artificial intelligence (AI) has evolved from a theoretical phenomenon to a powerful transformative force that is transforming industries, redefining jobs, and driving economic growth across the world. Its influence on the world economy runs deep and wide, from simplifying mundane tasks to fundamentally disrupting business models. With enhanced productivity, facilitation of innovation, and economic inclusivity, AI is poised to be a significant driver of economic growth in the 21st century.



Artificial intelligence technologies such as machine learning, natural language processing, and computer vision can contribute trillions of dollars to the global economy. Machine learning algorithms, for instance, are enhancing predictive analytics in supply chains, natural language processing is revolutionizing customer services with intelligent chatbots, while computer vision is revolutionizing sectors such as healthcare with precise medical imaging devices. According to PwC's 2022 report, AI would add as much as \$15.7 trillion to the GDP of the world by 2030. Economic value is spurred by two key sources:



Artificial intelligence is powering economic expansion through improved productivity and consumer demand stimulation. By automating tasks, AI enables businesses to optimize operations, drastically improving efficiency while saving time and resource consumption. In production industries, for example, AI-powered robots not only speed up production but also improve product quality and reduce errors associated with human labor. This ability to maximize productivity has explicit economic benefits. In addition, AI plays a crucial role in stimulating demand among consumers through enabling businesses to develop highly tailored products and services. Through suggesting that is personal in nature, digital platforms like Amazon and Netflix can provide more enjoyable customer experiences that increase engagement rates and translate into economic growth. This two-pronged benefit of productivity improvement and creation of consumer demand points to AI's key contribution to the modern economy.

Artificial Intelligence is revolutionizing numerous industries across the global economy, driving innovation and enhancing efficiency of operations:

Artificial intelligence is transforming industries end-to-end by improving operational effectiveness and spurring innovation. In healthcare, AI-powered diagnostic solutions are transforming the diagnosis of diseases and treatment planning. For instance, IBM Watson Health applies AI to help diagnose cancer more effectively, and DeepMind's AlphaFold has transformed protein structure prediction, opening doors to breakthroughs in drug discovery. Besides, AI algorithms can interpret medical images with the same accuracy as that of veteran radiologists, and aside from enhancing patient outcomes, it lowers healthcare expenses.

In finance, AI is augmenting anti-fraud and money laundering surveillance, optimization of algorithmic trading, and financial planning tailored to the individual. Chatbots and virtual assistants are transforming customer service with real-time interaction, and credit risk analysis enabled by AI is simplifying lending, making it more accurate and efficient.

[1]PwC. (2017). *The Economic Impact of Artificial Intelligence*. Retrieved from www.pwc.com

[2]IBM Watson Health. (2021). *How AI is Revolutionizing Cancer Diagnosis*. Retrieved from www.ibm.com

[3]DeepMind. (2022). *AlphaFold and the Future of Drug Discovery*. Retrieved from www.deepmind.com



Likewise, in retail, AI enables dynamic pricing, supply chain optimization, and better inventory management. With predictive analytics, retailers can forecast customer behavior and personalize marketing campaigns to more effectively engage customers, leading to higher sales and profitability.

Through these technologies, artificial intelligence is not just augmenting productivity but also simplifying and personalizing experiences in retail, finance, and healthcare.

While artificial intelligence promises great economic benefits, it also sparks concerns of job displacement. For example, data entry and assembly line manufacturing jobs are becoming automated; however, new AI programming, machine learning engineering, and data analysis jobs are emerging. Some jobs will be replaced through automation, especially those that entail repetitive and manual labor. AI, on the other hand, generates jobs by creating new categories of jobs and the need for highly qualified personnel in data science, AI development, and cybersecurity.

In order to balance the adverse effects of automation, governments and companies need to invest in reskilling and upskilling initiatives. Providing employees with skills to succeed in an AI economy is the way to ensure growth becomes inclusive and reduces inequality.

The mass-scale deployment of AI poses various challenges and ethical issues that need to be addressed to unlock its economic potential to the maximum. For instance, organizations such as the Partnership on AI are trying to create guidelines for the ethical deployment of AI and solving these challenges:

Extensive application of artificial intelligence is confronted with considerable challenges of data privacy, bias, fairness, and economic disparity. Given the fact that AI is based on huge datasets, issues of privacy and exploitation of sensitive information have become fundamental concerns. It becomes vitally essential to implement strong data privacy practices in order to safeguard user data and maintain public trust. Moreover, the values of fairness and accountability in AI systems are also essential to minimizing discrimination. AI algorithms that are developed using biased or incomplete data sets may unintentionally reinforce existing social biases and generate unfair results. Thus, the application of open methods and ethical standards is essential to strengthen the legitimacy of AI technologies.

Moreover, artificial intelligence's economic gains are not evenly shared around the world. The rich countries and big companies are likely to receive a lion's share of AI's economic fruits, hence widening the current economic disparities. In order to stem this disparity, international collaborations and fair access measures must be put in place to allow developing nations and small and medium-sized businesses to access the AI economy. It is paramount that we respond to these problems to create a more even and ethically acceptable AI ecosystem.

To realize the full potential of AI, stakeholders across industries will have to collaborate to address these challenges. For instance, initiatives like the European Union's AI Act attempt to regulate AI use while promoting innovation, and initiatives like AI for Humanity promote ethical AI research globally. Governments must prioritize investments in AI research and development, enact regulatory frameworks to facilitate the deployment of ethics-driven AI, and promote public-private partnerships to drive innovation.

Education systems must also adapt to prepare the workforce for an AI economy by emphasizing critical thinking, creativity, and technical literacy. Concurrently, companies must adopt responsible AI practices by incorporating transparency and accountability into AI systems.

In the end, we can say that

AI is transforming the world economy, fueling productivity, innovation, and growth in industries. Although it presents challenges, including job displacement and ethics, these can be managed through forward-looking policies and cooperation. By adopting AI responsibly, the world can harness unparalleled economic opportunities to create a more innovative and inclusive future.

[4] Partnership on AI. (2023). *Guidelines for Ethical AI Use*. Retrieved from www.partnershiponai.org

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Teamwork In Business

By Motahareh Gholizadehsarvandi

Have you ever thought about the importance of teamwork in a business? It may not be as important as the top management's job or as significant as a company's financial power. However, studies show that 'teamwork' is the primary dimension of building a successful business. Let's break it down why it is of great importance:

What is teamwork?

According to the Cambridge Dictionary, teamwork is the activity of working together in a group with other people, especially when it is successful. In other words, it refers to problem-solving abilities within a group. A group is simply a collection of individuals who work individually towards a common goal. However, teamwork is not about working separately but simultaneously and being interconnected. Based on this definition of teamwork, we can identify long-term stability, collaboration in a social environment, shared decision-making power, and working towards a common goal as key characteristics of effective teams.

Is teamwork necessary in a business?

Sure is! A team is much more than just a group. A business needs a team and teamwork for its very survival. From the functionality of a business and profit-making to employees' emotional and mental status, teamwork plays a crucial role. They have a huge impact on the overall performance as they can address challenges effectively and efficiently. They can fulfil the company's goal by depending on each other and improving their productivity once they have been heard and have made a wise decision. Sharing different skills and perspectives, building stronger relationships, and aligning goals with organizational objectives foster creativity and innovation, thus creating a competitive advantage for the company.



Teamwork: a risk or an advantage?

Indeed, sometimes teamwork does not work. In fact, according to some statistics, 50 to 70 percent of a business's failure is because of poor teamwork. It is acceptable that people have different skills and perspectives, and these differences can sometimes present challenges. Some factors lead to a team's failure, such as weak leadership, lack of clear goals, poor communication, resistance to collaboration, imbalance of workloads, etc. While teamwork can be a powerful tool for a business, it can also be destructive and risky sometimes. Being attentive to the drawbacks can help to build a better teamwork environment.

What to do then?

The most influential role in reducing tensions and failure of a team is dedicated to the group leader, who can be the main manager as well. To borrow from Shakespeare, "Some people are born leaders, some achieve leadership, and some have leadership thrust upon them." A strong, confident leader is aware of the team's strengths and weaknesses and knows the program's ins and outs. If we want to consider the hierarchy, there should be a person on top who can finally decide about everything. However, this person must be fair, open-minded, and committed to moral principles. A qualified team leader would set the goal towards the company's goals, listen to each member's idea, modify the chosen idea if needed, and adopt the best out of it for the business. They also try to resolve conflicts constructively in peace, motivate and inspire the members, build trust, and improve communication as much as possible. A leadership position shall be defined delicately as it holds the power to either drive a business to unparalleled success or lead it to collapse.

In conclusion, as stated earlier, teamwork is a group of individuals working together to achieve a common goal. Effective teamwork can create a supportive and friendly work environment, leading to higher productivity levels, long-term stability, and differentiation from other businesses. It also permits the correct distribution of tasks based on strengths, which ensures higher-quality outcomes. Consideration of leadership selection, however, is of great importance as it directly impacts the business's well-being.



Economic Growth And The Decline Of Biodiversity

By Parmida Ghorbani

Economic growth has brought significant consequences to our lives, with one of its major impacts being the decline in biodiversity. This article explores how economic expansion affects nature and examines the steps that can be taken to mitigate the environmental damage. If we continue on this current path, will there be a natural world left for future generations to benefit from?

Imagine walking through a dense forest filled with birds, trees and fresh air. Now, imagine returning a decade later, finding it replaced by roads and factories. The rapid pace of development has created a world where the balance between progress and preservation is difficult to maintain. As economies expand, we must ask ourselves: can we progress without destroying the world around us?

Economic growth has improved living standards, created jobs, and advanced technology, making life easier for many people. However, this progress comes at a cost. Expanding cities, large-scale agriculture and industrial development may boost the economy but also destroy forests, pollute rivers, and disrupt ecosystems. While humans benefit, nature often pays the price.

Over the last few decades, industrialization and agriculture have been responsible for losing significant hectares of forest yearly. This deforestation decreases biodiversity and speeds up climate change because fewer trees absorb carbon dioxide. Air and water pollution are other significant problems. Toxic substances disrupt ecosystems, pushing species closer to extinction. The UN FAO estimates that 10 million hectares of forest are cut down annually. While deforestation has slowed, it is still a major concern. This shows the urgent need for better policies and actions to protect natural resources in the region.



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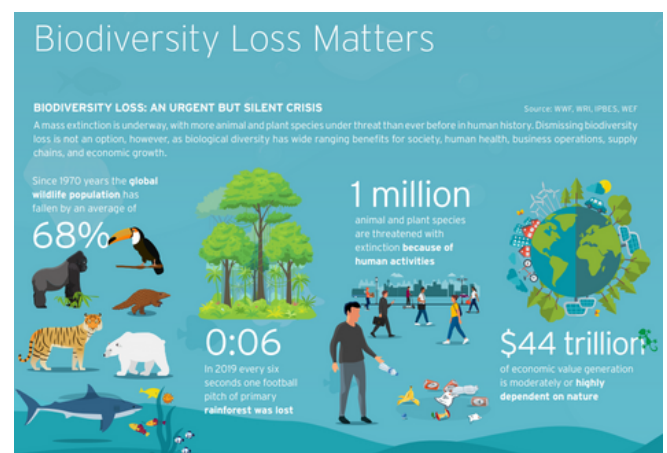
Even though economic growth often harms nature, there are ways we can reduce the damage. One solution is to adopt more sustainable practices. For example, industries can use cleaner technologies, reduce pollution, and switch to renewable energy. Tesla, for instance, is transforming the automotive industry with its electric vehicles, helping reduce our reliance on fossil fuels. Governments can also create stronger laws to protect the environment. A good example is Sweden, which has implemented strict carbon taxes and, according to Tax Foundation Europe, has been able to reduce carbon emissions while maintaining GDP growth. On a personal level, each of us can make a difference. Simple actions like reducing waste, saving water, using eco-friendly products, and cutting down on carbon emissions all add up.

However, we will miss the bigger picture if we think these actions alone solve the problem. While these efforts are valuable, they are not enough to stop the larger environmental challenges, such as deforestation and unchecked industrial growth. According to a 2019 report by the United Nations, nature is declining at an unprecedented rate, with up to one million species at risk of extinction. Air and water pollution could lead to millions of early deaths each year. As ecosystems collapse, the resources we rely on, like food and clean water, will become scarcer. If we keep thinking of ourselves as separate from nature, we will fail to understand that our fate is tied to the planet's health; if we destroy it, we are destroying ourselves.

It is not too late to save the species at risk of extinction. Every small action we take can make a difference. We can start by making better choices every day. Economic growth should no longer come at the expense of nature. Our actions, whether big or small, must support the planet's health. It is the decisions we make today that shape the world of tomorrow.

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