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Begreifen or *Verstehen* in the Thought of Ludwig von Mises: Is There a Difference?

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Abstract
An increasing number of scholars have argued that the theoretical approach of Ludwig von Mises ought to be viewed along lines that are more favorably disposed to interpretive historical methods than was once generally recognized. Despite Mises's adamant statements about the apodictic certainty of theory derived from purposefulness, particular purposes were often seen by Mises to be embedded in a specific context. While this essay does not deny that such "understanding" can be useful in the application of theory, it argues that there were very good reasons why some of Mises's students, particularly Murray Rothbard, took their teacher's arguments in the more logically deductive and apodictic direction. The distinction between Mises's idea of *Begreifen* and the historically laden concept of *Verstehen* is seen to be more substantive than nominal.

Keywords: Ludwig von Mises, Max Weber, methodology, understanding, conception, *Verstehen*, *Begreifen*, Murray Rothbard, epistemology, economics, sociology
JEL Codes: B1; B13; B21; B25; B31; B41; B53

I. Whither Mises?

There is a long-standing inclination among some Austrian economists, beginning with Ludwig Lachmann, to interpret the economics of Ludwig von Mises in ways that are compatible with more historically sensitive treatments of human purposefulness and not the more

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axiomatically derived understanding of Misesian theory promulgated by Murray Rothbard. Thus, Lachmann ([1951] 1977) argued in his widely influential review of *Human Action* that Mises was carrying on "the work of Max Weber" (p. 95).

In a well-known essay, Gabriel Zanotti and Nicolas Cachanosky made a similar case, contending for a "Machlupian" interpretation of Mises to counter the more usual Rothbardian view. From their perspective, Fritz Machlup's reading of Mises presents a much more nuanced understanding of economic processes that requires interpretation of "the conditions under which action takes place" (Zanotti and Cachanosky 2015, p. 12).

More recently still, this approach was championed by Laura Grube and Virgil Storr when they cited Mises as contending for "the comprehension of *the meaning and relevance of human action*" and thus argued that it has always been essential for Austrian economics to "look to the meanings that individuals attach to their actions and their circumstances" (Grube and Storr 2015, p. 30).

And yet there remain solid reasons why Rothbard took his reading of Mises in the direction that he did. To contend that Mises understood that historical conditions are important in the application of economic theory is not to say that historical understanding and economic theory are the same thing. How far can one go in the application of conditional historical empirics and still remain within the realm of economic theory for Mises? That is the central question that must be answered, and the evidence seems to be: *not very far*.

II. Classical Austrianism Versus Neo-Austrianism

Indeed, each of the approaches mentioned above recognizes a tension between Mises's desire to demonstrate the real-world relevance of theory, on the one hand, and his insistence that it remain unmixed and uncontaminated with history, on the other. Even more difficult is Mises's persistent claim that the theoretical holds primacy in every interpretive endeavor. Thus, economic theory is rigorously separated from "thymology," or the study of historical states of mind, and all that falls into the latter category, he argued, must be rigorously tested against the former, and *not* the other way around (on the meaning of thymology, see Mentzel [2018, pp. 18–20]).

This point is far from being an outlier in his work or in Austrian economics generally. It is in fact part of Mises's Mengerian inheritance, and it is represented not only in Rothbard but other Austrian thinkers within what I term the classical mold. Thus, Storr and Grube note that

Israel Kirzner also denies that an interpretive theory of culture is at all necessary for a theory of entrepreneurship (Grube and Storr 2015, p. 43n14).

Far from being part and parcel of Austrianism, then, historical understanding of "the meanings that individuals attach to their actions and their circumstance" is really an offshoot of its own, representing a neo-Austrian or Austro-historical school of political economy. In fact, the idea of historical understanding advocated by these scholars is far more the product of the original school's erstwhile opponents in the *Methodenstreit* than anything advocated by Menger or Mises.

The best way to understand this difference is to carefully unpack the terms set forth by Mises to distinguish his method from the *verstehende Oekonomie* of Weber and others working within the historical school. Doing this will illuminate an important development that distinguishes classical Austrianism from neo-Austrian theory.

At the core of this difference is the fundamental distinction between *Verstehen* as it was applied by historians and Weberian sociologists and *Begreifen* as it was meant by Mises and those who follow in his path. This distinction points to very different questions being asked by the two groups, and while at one level the difference as to what constitutes a science of human action can be seen as merely semantic, at another level, it raises interesting questions about the nature of economics, or at least neo-Austrian economics, as a discipline.

III. Weber Versus Mises

As part of his ongoing reinterpretation of the theoretical underpinnings of Mises's thought, Lachmann stated that he was merely supporting what Mises had "admitted explicitly: 'In itself, it would be conceivable to define as understanding [*verstehen*] any procedure directed toward comprehension of the meaning of things.'" From here, Lachmann went on to cite Mises on his distinction between *Begreifen* and *Verstehen*, where the former "seeks to comprehend the meaning of things by discursive thought" and the latter "seeks the meaning through a total empathy with the total situation under consideration."

Lachmann ([1966] 1977) then made a very bold assertion: "I do not believe that today's usage demands this distinction" (p. 49). The claim is bold because Lachmann was explicitly invoking not the discursive reasoning from logical premises invoked by Mises but the

more intuitive sense of *Verstehen* proposed by Johann Droysen and Wilhelm Dilthey (pp. 47–48).

While one might sympathize with the turn to the hermeneutical, Mises was in fact attempting to avoid that definition of *Verstehen*. Both Droysen and Dilthey gave a role to sympathy or psychological empathy in their interpretive schemes. Both were very important to Max Weber's sociology and later to Hans-Georg Gadamer's philosophy, but Mises explicitly rejected these lines of theory as neither sociology in the true sense of the word nor economics in the sense of catallactics (Mises [2013, p. xviii] explained this in his introduction to the English edition of *Epistemological Problems*).

And the reason was very much based on what Mises understood to be the essence of "discursive thought." To be discursive here refers to what the ancients originally meant by reason. German philologists and classicists of Mises's day still used the term in this sense. It means to argue logically in order to find a point that is apodictically certain. Thus, Mises's choice of this term leaves little doubt as to his intended meaning, and his reaction to Weber illustrates the point.

Weber, according to Mises, was simply "wrong" when he contended that "the more abstract the laws, the less they accomplish for the requirements of causal imputation of *individual* phenomena and thereby, indirectly, for the understanding of the meaning of cultural events." Mises did not accept Weber's assertion that sociology deals with "cultural events," nor did he accept the idea of the increasing insufficiency of causal generality for scientific understanding.

Weber's mistake, according to Mises (2013), was to have placed history and sociology "in the same category" because he "did not realize that there is a science that aims at universally valid propositions" (pp. 69, 99). There is simply no way then to avoid the fact that by sociology, Mises meant praxeology, and he went so far as to insist that economics represents sociology's "best developed branch" (pp. 4, 101).

In fact, Weber did understand the nature of the claims being made on behalf of cause-and-effect reasoning.[1] He was simply denying the importance of those claims to the specific question he was trying to address: How do the rules of social life, and the

[1] One should consult here Weber's (2019, p. 201) treatment of the socialist calculation debate, where he cites Mises specifically.

tendencies they engender in individual action, come to be? This was *the* essential *sociological* enterprise for him, but it was not Mises's definition of the field nor his concept of understanding. Mises's understanding was still rooted in primarily logical relations of cause and effect emanating from categorical purposefulness in general, rather than from any particular set of individual ends or means.

Thus, Mises insisted, "Every law of causation—no matter in what science—gives us information about a relationship of cause and effect." Catallactics is thus in this sense an exact science and has "practical importance for the understanding of concrete [that is, actual] events" (Mises 2013, p. 84). Yet, as Mises's reference to Weber on abstraction shows, Weber was not really denying the usefulness of cause-and-effect reasoning, but actually trying to find ways of more fully explaining happenings in the real world, or what Weber defined as the "fullness of reality." And here is where we get to the significant fundamental differences between the notions of *Begreifen* and *Verstehen.*

For Weber, to *understand* an event does not exclude knowledge of logical consequences or causality in its most common attribution, but to fully explain the concatenation of human choices in all their "fullness," one has to include the qualities of specific decisions, or rather their subjective "content." Because laws with predictive power are necessarily the most general in their application to purposeful action as such, they are "the most empty" of this sort of subjective "content."

Mises's (2013) opposition to Weber thus arose from a semantic opposition to the German definition of sociology and, by implication, the meaning of "concrete" phenomena, the study of which he wanted to rename "universal history" (p. 99).

IV. Begreifen Versus Verstehen

Much of the difference between Mises's *Begreifen* and Weber's *Verstehen* is elucidated in Peter Mentzel's (2018, pp. 15–28) "Praxeology, History, and the Perils of Historicism." For Mises the latter concerns the reasons why "John comes to value apples over oranges at the market." The former, however, gets to the "realities of natural and praxeological laws" (pp. 19, 21).

In this light, Lachmann's aim to subsume Mises's understanding of *Begreifen* under *Verstehen* cannot be pursued without inviting significant confusion about Mises's original intentions. Mises certainly did not mean to imply that his notion of interpretation was interchangeable with the historical approach. Quite the contrary.

Interestingly, Lachmann based his reading of Mises on one sentence in particular, where Mises (1933) had noted that it would "be conceivable *to define as understanding any procedure* directed toward the comprehension of the meaning of things" (p. 125, emphasis added).[2] Mises's approved English version, published some twenty-seven years after the German one, however, would read as follows:[3]

> In and of itself, it would have been *possible to include* in the definition of understanding *every* procedure that is directed toward the comprehension of meaning. However, as things stand today, we must accommodate ourselves to the prevailing usage. Therefore, within the procedures employed by the sciences of human action for the comprehension of meaning we shall differentiate between conception and understanding. Conception seeks to grasp the meaning of action through discursive reasoning. Understanding seeks the meaning of action in empathic intuition of a whole. (Mises 2013, p. 121, emphasis added)

But even in the original German work, Mises took care to ensure that the distinctive meaning he had in mind was consistently set forth, even citing Walter Bagehot's note that "rightly conceived, the Historical method is no rival to the abstract method rightly conceived" (Mises 1933, p. 121).[4]

From here we can see that Mises's principal aim was to suggest *at most* an auxiliary definition that was *to be included* while remaining distinct and separate from historical interpretation. Thus, the later translation clarified that *Verstehen* could have *included* "every procedure," but it certainly did not claim that the procedures of

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[2] "An und für sich wäre es denkbar gewesen, als Verstehen jedes auf die Erfassung des Sinns gerichtete Verfahren zu bestimmen."

[3] The translation was undertaken by George Reisman with preparatory assistance from Arthur Goddard and support from the Volker Fund. The title of the original German would have been "Fundamental Problems in Economics" if literally translated, but it was changed to *Epistemological Problems of Economics*. It first appeared in print in 1960. As Jörg Guido Hülsmann notes in his extensive introduction to the third edition published by the Mises Institute, "Mises did not object to the new title or any other parts of the translation . . . reason enough to republish the book without any alterations except for the correction of orthographic errors (Mises 2003, p. xi).

[4] Thus, even where *Verstehen* is deployed, Mises is always careful to maintain the separation between knowing as a logical apodictic process and knowing in its historically interpretive form. See his discussion in Mises (1933, pp. 67, 121, 122–25). My thanks go to Charles Steele for emphasizing this point in his comments.

history and economics were the same. And his choice of the word *Begreifen* is particularly important in this regard.

Begrefen, the German word for "to conceive or conceptualize," means literally to "grasp" something. Unlike *Verstehen*, which has a much more interpretive connotation, to *grasp* something is to physically possess it in a way that leaves little doubt that you have it. The term is much more tangible and palpable about the conveyance of meaning, or knowledge.

What you grasp is held as a truth conceptually and held without doubt or ambiguity. That Mises chose this notion to convey just this sense cannot be denied when he continued with the very clear assertion that "where conception is at all applicable, it takes precedence over understanding. That which results from discursive reasoning can never be refuted or even affected by intuitive comprehension of a context of meaning" and that "what has been arrived at by means of conception must be acknowledged as established, or else must be shown to be either unproved or confuted" (Mises 2013, pp. 121–22).

V. Conclusion: Whither Subjectivism?

And so we come to the interesting question of the role of history in Mises's thought and why Lachmann took his reading of Mises's work in the direction that he did. As Peter Mentzel pointed out, Mises saw thymology as the primary means of understanding *why* people have the aims and preferences that they do. This is fundamentally a historical contextualizing of preferences. But how one judges the means by which those subjective preferences are pursued remained, for Mises, a matter of objectively logical cause-and-effect analysis. In other words, plans were to be measured against the "realities of natural and praxeological laws."

The hallmark and source of fame of Lachmann's work, by way of contrast, was his insistence that subjectivism has to be extended beyond mere tastes and preferences to embrace an interpretation of the choices among means employed by individuals, or what can be called the subjectivism of plans (see the excellent discussion of this by Lewis [2018]). In this work, Lachmann drew from Weber's initial insights into ideal-type formation, but again, this was something Mises, Rothbard, and others who followed in their train vigorously opposed. Such was the course of subjectivism in Lachmann's thinking.

While this was certainly a major advance for the science as whole, it was Lachmann's own project, not Mises's (on Lachmann's role as

innovative "outsider," see the illuminating discussion in Stein and Storr [2023, pp. 35–35]). Taking his particular reading of *Human Action* in the way he did says more about Lachmann's attempt to enlist Mises's support for this more thoroughgoing form of subjectivism than about Mises's own thoughts on the matter.

That Mises either did not understand this aspect of Lachmann's ideas or, more likely, did not fully approve of it is what gives Rothbard's reading of Mises its greater plausibility.

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Economic Dynamism: Teaching Creative Destruction Using Images

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Abstract
This paper provides three immersive lesson plans that showcase the intricate relationship between economic dynamism and economic growth, emphasizing the narrative power of images to illustrate the concept of creative destruction. Economic dynamism is the process by which innovation, entrepreneurship, and market forces continually reshape industries and economies. Creative destruction, a term coined by economist Joseph Schumpeter, embodies this transformative process in which new technologies, ideas, and business models replace outdated ones, leading to economic progress. This work is especially timely, as Joel Mokyr, Philippe Aghion, and Peter Howitt won the 2025 Nobel Prize in Economic Sciences for their work on how innovation and the forces of creative destruction can drive economic growth.

JEL Codes: A20; A21
Keywords: creative destruction, innovation, technological progress, urbanization, transportation hubs, population density

* To receive the PowerPoint decks created for the lessons, contact G. Dirk Mateer.

I. Introduction

Images serve as powerful tools to document and convey the impact of creative destruction over time. Through visual storytelling, images depict not only the tangible changes in landscapes and cityscapes but also the human aspects of economic shifts—job creation, displacement, and societal adaptation. Images can also show the transitions from old to new technologies, thereby capturing moments of technological innovation, such as the rapid transformation of video games from simple lines and dots to immersive worlds. In addition, examining images provides a connective framework to explore these issues longitudinally. We illustrate how economic dynamism drives economic growth through creative destruction. This highlights how images and other media not only freeze these moments in time but also serve as evidence of the dynamic forces shaping our economies. This approach offers a unique perspective on the evolving nature of markets and economies, compelling us to contemplate the complex interplay between innovation, disruption, and progress in contemporary economic landscapes and technology. This project humanizes the work of Howitt and Aghion (1992), who first noted the importance that obsolescence plays in growth theory.

In section 2, we provide a brief overview of how visual media enhance the teaching of creative destruction. Section 3 presents the lesson plans. The first lesson provides a history of advancement and, subsequently, creative destruction in video games and gaming platforms. The second lesson uses a series of postcards that depict then-and-now comparisons of cities from around the world to illustrate economic dynamism. The third lesson uses Google Earth time-lapse images from space to visualize how economic growth is changing our planet. The lessons are designed to complement an instructor's regular lecture in Principles of Macroeconomics and high school economics classes. The lessons align with Council for Economic Education standards 16.H.1, 16.H.2, and 16.H.3 and can be taught individually or collectively. By providing instructors with three distinct immersive experiences, it is our hope that students will better understand how creative destruction has reshaped our world for the better. In section 4, we provide concluding remarks.

II. Literature Review

Joseph Schumpeter's theory of creative destruction lies at the heart of economic dynamism. Writing in the early decades of the twentieth century, Schumpeter (1942) argued that capitalism's vitality stems

from its capacity to innovate, disrupt, and continually transform itself. Entrepreneurs, whom he described as "agents of change," drive this process by introducing new products, technologies, and business models that replace outdated, obsolete ones. Schumpeter viewed this process as a source of both progress and instability: While innovation fuels growth and productivity, it simultaneously displaces workers and renders old industries obsolete. The process of creative destruction is a continuous cycle of renewal and disruption that underpins modern capitalism.

Schumpeter's framework extends beyond economics: Creative destruction is also a social and cultural phenomenon (Yueh 2018). Innovation reshapes how societies work, live, and imagine the future. Schumpeter recognized that technological revolutions, from the steam engine to the digital age, require imagination and willingness to embrace change. Teaching this process effectively involves more than explaining the economic mechanisms; it requires helping students visualize how new ideas transform the world around them.

This perspective aligns with the work of Acchiardo et al. (2021), who advocate using visual media—content from nine Pixar films—to teach foundation-level economic concepts in a way that resonates with Gen Z learners. Drawing on cognitive load theory, a framework that explains how working-memory limitations affect learning (Sweller 1988), they argue that images and stories enhance retention and engagement by reducing abstraction. By connecting emotional narratives with economic ideas, educators can make learning stickier and more meaningful. Their research demonstrates how film clips can illuminate concepts as varied as externalities, labor markets, specialization, time preferences, production possibilities, subjective value, and monopsony.

Combining Schumpeter's concept of creative destruction with Acchiardo et al.'s (2021) Gen Z–friendly, image-based pedagogy offers a powerful framework for teaching economic dynamism. Visualizing innovation through images of industrial decline, technological renewal, and entrepreneurial creativity allows students to *see* Schumpeter's theory in action. This approach transforms an abstract learning process into a tangible narrative of progress and adaptation. As Yueh (2018) notes, innovation is not merely mechanical but profoundly human, driven by imagination and vision. By integrating visual storytelling with Schumpeterian theory, educators can engage students emotionally and intellectually, helping them understand creative destruction as a living force shaping the modern economy.

The immersive learning approach used in this paper originated with Geerling and Mateer (2015), who explained how to use a live karaoke performance in class to develop the intuition for the law of supply. Geerling et al. (2019) explained endogeneity and exogenous factors by having students build paper airplanes and fly them in class. Geerling and Mateer (2021) used ice cream as a transversal to help students understand product differentiation and how ice cream sandwiches can explain what characteristics make a good money. Acchiardo et al. (2021) invented an ingenious way to transform cost tables into a series of sudoku games to help students learn cost formulas. More recently, Mateer et al. (2025) used different fragrances and the sense of smell to transform how students learn about externalities.

III. Lessons on Economic Dynamism

For each lesson plan, we provide images, citations of articles and websites, PowerPoint slides (for lessons 1 and 2), a series of discussion questions and answers that can be used for either formative or summative assessment, and a five-question Kahoot to highlight some of the most important points. Each lesson is designed so that it can be covered in twenty minutes.

Lesson 1: The Evolution of Video Games and Gaming Platforms

Overview: Video games are immersive experiences that have rapidly evolved over the last fifty years. Using the theme music as a cue, we showcase some of the most popular video games ever developed. Students are encouraged to guess the video game as the sound plays. Once a student guesses correctly, the instructor reveals the game and the platform. The process repeats as we move forward through time. By traveling down memory road, students relive when they last played the game and revisit the platforms they used when they were younger. This hook allows students to better understand how creative destruction works.

Key concepts: creative destruction, innovation, technological progress

Objectives:

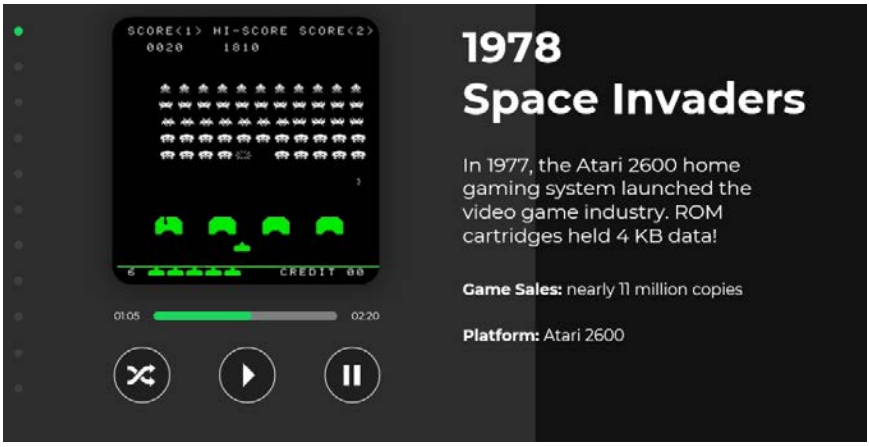
- Understand the crucial role that innovation plays in creative destruction.
- Demonstrate the importance of technological innovation in product development.
- Explain the need for good content to drive demand for platforms and vice versa.

Materials:

- The ability to project an animated PowerPoint deck in front of the class
- The ability to play sound
- A small bag with stickers or candy

1.1 Space Invaders

Figure 1



A. Open the video game PowerPoint deck and project it in front of the class.

B. Click the start button. The music from *Space Invaders* will begin to play. As soon as someone shouts out the correct answer, hit pause. Give them the prize bag, so they can choose a sticker or small candy.

C. Advance the slide so the image above is visible to the entire class. Point out that the data limitations of the Atari were extremely strict. At the time, it was quite an accomplishment that the developers could create simple games.

1.2 Continue the video game journey through time

A. Rinse and repeat the same process by playing the sound first, waiting for someone to correctly guess the video game while noting how the quality of the theme music, graphics, and gaming platforms are steadily getting better. Unique innovations introduced with each platform are highlighted in green.

Figure 2

Figure 3

Figure 4

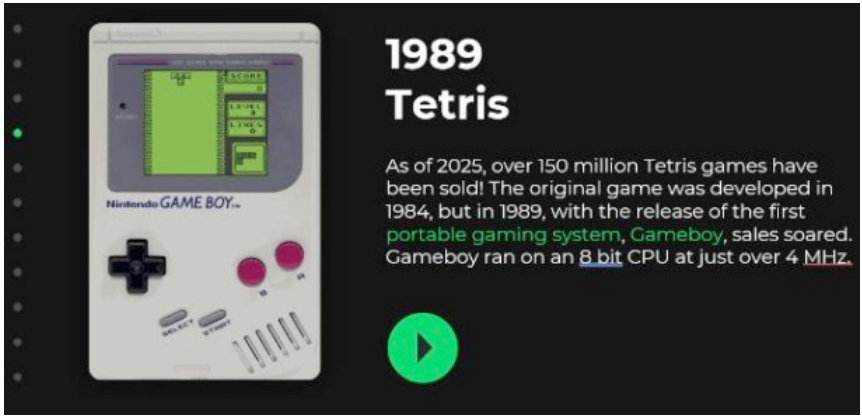
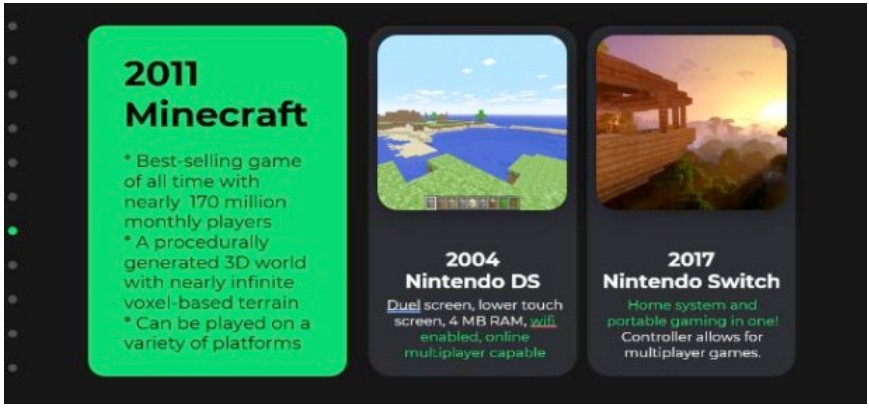


Figure 5

Figure 6

Figure 7



B. Ask your students how they think their parents felt when some of these "outdated" games and platforms were released.

1.3 Showcase the music and platforms in today's best video games

A. Ask your students to share their favorite video games and platforms. Create a list on the whiteboard at the front of the class. Leave ample time to get a wide variety of answers. To spur a conversation you can reference Pereira and Makuch's (2025) list of the top games of 2025.

B. Extend this discussion to cover virtual reality, holograms, and other emerging technologies. Ask your class how long they think it will take for even today's best video games to become obsolete.

1.4 Play this Kahoot: https://create.kahoot.it/creator/8e3df18d-25ab-4695–8e33-ee59974c319b

1. The original Atari system cost $60 in 1978. What would be the comparable price in today's dollars?

Answer: $300.

2. The Atari had 4 KB cartridges; the PS4 had ___ of space by 2013.

Answer: 1 TB.

3. Which gaming platform was the first to utilize motion controls?

Answer: The Wii, which used a motion sensor to translate human movements into in-game movements.

4. Which entertainment industry has the highest global revenue?

Answer: Video games. See Arora (2023).

5. What is the bestselling video game of all time?

Answer: Minecraft.

Lesson 2: Cityscapes

Overview: This lesson explores the factors that have contributed to remarkable transformations of four cities over a short period of time. For each city, we show pictures that illustrate dynamic growth and discuss the factors that have contributed to these transformations, as well as related challenges and opportunities. This lesson uses a series of before and after postcards to pique students' interest in the development of megacities.

Key concepts: urbanization, transportation hubs, population density, capitalism

Objectives:

- Describe the conditions that lead to rapid economic growth.
- Understand that rapid economic growth is linked to capital inflow.

- Explain the benefits and costs of rapid economic growth.

Materials:

- The ability to project a series of images in front of the class
- A laser pointer to help focus attention on particular parts of the Images

2.1 Shanghai, China, 1990 vs. 2010

A. Show this image of Shanghai from 1990. Ask your students to guess which city this is. If the students need help, provide the continent and other geographical information. After someone guesses correctly, show the image from 2010.

Figure 8

B. Teacher-led discussion questions

1. Ask students to guess: What percentage of the world's cranes were in Shanghai in 2009?

Answer: One-fourth (25 percent) (Thompson 2011).

2. What are some of the factors that contributed to this growth?

Answer: China started to open up to foreign trade and investment in the 1980s. Shanghai was a significant transportation hub, with Hongqiao International Airport and Shanghai's port, one of the busiest ports for container ships in the world. The development of the Pudong New Area, a district that has the most supportive business environment in the city, also created strong incentives for firms to relocate in Shanghai.

3. What are some problems associated with Shanghai's surge in urbanization and population growth? Brainstorm and summarize your ideas.

Answer: The increase in the population of Shanghai has created lots of traffic and pollution and led to higher rent. Shanghai's rapid surge in urbanization has been accompanied by big changes in land use. Shanghai has also become an urban heat island. As forests and farmland have been replaced with concrete, temperatures have risen dramatically.

2.2 Seoul, South Korea, 1900 vs. 2024

A. Show the image of Seoul from 1900. Ask your students to guess which city this is. If the students need help, provide the continent and other geographical information. After someone guesses correctly, show the image from 2024.

Figure 9

B. Teacher-led discussion questions

1. What was the impact of the Korean War (1950–53) on South Korea?

Answer: The Korean War had a devastating economic and social impact on South Korea. Economic challenges, damaged infrastructure, political instability, and corruption hindered the development of the country for years after the war. However, in the 1960s, the country started to experience significant economic development. The country was about to experience one of the most dramatic economic transformations in history.

2. What was "the miracle on the Hangang River"?

Answer: It refers to the rapid economic growth of South Korea and its rise from one of the poorest countries in the world in the 1950s to a global economic and industrial powerhouse, a leader in innovation and manufacturing in just one generation. The country has become a global leader in the production of cell phones, cars, semiconductors, steel, and chemicals. In more recent years, it has become known for the global success of its cultural exports, which include K-pop, K-drama, and games.

3. How has the country's investment in education and technology contributed to this growth?

Answer: Investment in education and technology helped the country create a skilled labor force that was able to support industrial growth. Eventually, South Korea turned from human labor to more machinery and technology. South Korea is known for its technological innovations. GDP per capita exceeded the European Union average by 2017, and the country has one of the highest rankings for health standards and education in the world.

2.3 London, United Kingdom, 1996 vs. 2024

A. Show the image of London from 1996. Ask your students to guess which city this is. If the students need help, provide the continent and other geographical information. After someone guesses correctly, show the image from 2024. This image of London is not part of the historic city center, even though the buildings in the foreground are. Also, this picture was taken from the direction of the Big Ben clock tower and the Parliament building. It is a reminder that in any large city, economic dynamism can happen in one part but not another.

Figure 10

B. Teacher-led discussion questions

1. What factors make London economically dynamic?

Answer: London's economy is robust, generating over 20 percent of national output and a large share of exports in services. This growth is supported by a diverse and dynamic economy, with financial powerhouses in the Square Mile and a burgeoning tech ecosystem in East London's Tech City.

2. What role does education play in attracting talent to London?

Answer: The city's world-class universities and its global reputation attract a diverse workforce, with over 40 percent of London's workforce being born overseas. This influx of talent is crucial for the city's business growth.

3. What role does connectivity play in keeping London dynamic?

Answer: London's extensive connectivity, including six airports and a robust rail and road network, facilitates seamless global collaboration, which is essential for businesses looking to expand their reach. The Internet is also rated superfast by Broadband Speed Map across 99 percent of the city, and there is universal coverage. These two factors boost productivity.

2.4 Toronto, Canada, 1998 vs. 2025

A. Show the image of Toronto from 1998. Ask your students to guess which city this is. If the students need help, provide the continent and other geographical information. After someone guesses correctly, show the image from 2025.

Figure 11

B. Teacher-led discussion questions

1. How has economic growth affected the ethnic makeup of the city?

Answer: One of the most impressive results of this growth is how Toronto's ethnic diversity has changed to make it one of the most culturally diverse major world centers. In the city of Toronto's 140 neighborhoods, more than two hundred languages are spoken, with 45 percent of residents speaking a language other than English or French. Toronto was once known for having one of the world's largest Italian populations, but Italian is now the seventh most common spoken language, behind Mandarin, Cantonese, Tamil, Spanish, and Tagalog. This reflects the major demographic change Toronto has undergone in the twenty-first century.

2. Why is economic growth much better than stagnancy?

Answer: Economic growth creates a vibrant urban environment and provides jobs and opportunity. One need only look at the American Rust Belt of the 1970s and the urban decay experienced by cities such as Buffalo, Detroit, Pittsburgh, and Cleveland to see the dangers of stagnancy. Growth provides economic stimulus and means new people, vibrancy, and economic opportunity. By contrast, with more than 350 construction cranes at work, the greater Toronto metropolitan area has the most of any metropolitan area in North America, and more active cranes than New York, Boston, Los Angeles, Seattle, San Francisco, and Washington combined.

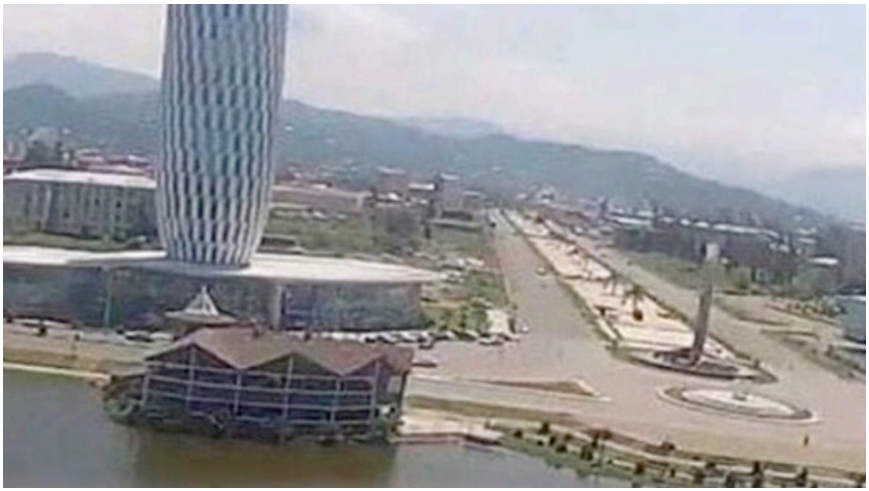
3. The population of the greater Toronto metropolitan area is expected to double in the next twenty years. What steps should Toronto take to help manage this influx?

Answer: Growth also means the city's infrastructure may not be able to deal with such things as sewage and the demand on the power grid to accommodate the expected growth. Forward-thinking initiatives will also be needed to extend mass transit lines to areas that are not yet developed.

2.5 Batumi, Georgia, 2012 vs. 2025

A. Show the image of Batumi from 2012. Ask your students to guess which city this is. If the students need help, provide the continent and other geographical information. After someone guesses correctly, show the image from 2025.

Figure 12



B. Teacher-led discussion questions

1. How has the climate in Batumi contributed to economic growth?

Answer: The climate is subtropical. Winters are cool, with average highs in the fifties, and the summer months have highs in the seventies. The temperatures are regulated by the nearby Black Sea. Because the climate is highly desirable, tourism is a major industry.

2. Why is Batumi's economic growth so impressive?

Answer: There is no single answer. Investors from Europe, the Middle East, and Asia see Batumi as a prime investment opportunity. This has led to thousands of jobs in construction, tourism, and business services. Also, the Georgian government has encouraged real estate and business investment with low taxes and simplified regulations. This business-friendly climate has made Batumi an ideal place to develop.

3. What investor-friendly tax policies has Batumi enacted?

Answer: Georgian legislation provides several benefits that allow optimizing returns while supporting the development of real estate in the region. Georgia offers an attractive tax regime for foreign investors, with relatively low tax rates and no restrictions on real estate ownership. The government encourages international investment, offering foreigners the same tax benefits as residents. In Georgia, there is no wealth tax, which makes real estate investment in Batumi more attractive. In addition, capital gains made on the sale of a property are subject to a lower tax rate than in many other countries, allowing investors to maximize their profits when reselling.

2.6 Play this Kahoot: https://create.kahoot.it/creator/13a2be4d-4f7f-4f60-b9e8–217ffd5505f0

1. What percentage of the world's cranes were in Shanghai in 2009?

Answer: 25 percent.

2. What is one of the unintended consequences of the rapid growth in Shanghai?

Answer: The city has become an urban heat island.

3. South Korea's GDP per capita first exceeded the European Union in what year?

Answer: 2017.

4. What percentage of London has access to superfast Internet?

Answer: 99 percent.

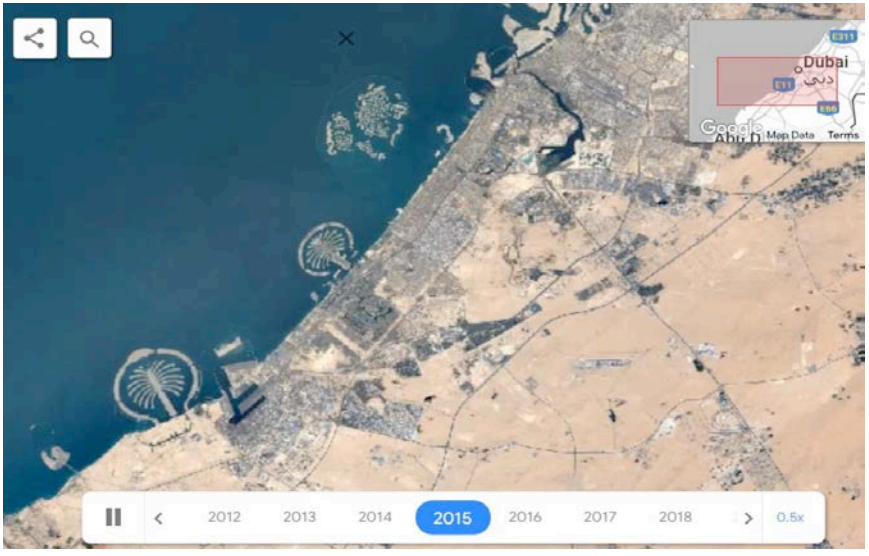
5. How many languages are spoken in Toronto?

Answer: Over 200.
6. What is the primary driver of economic growth in Batumi?
Answer: Tax incentives.

Lesson 3: Google Time Lapse
Overview: Google Earth is a tool that enables you to travel, explore, and learn about the world by interacting with a virtual globe. With Google Earth, you can view satellite imagery as far back as 1984. Google Earth relies on a vast database of satellite images, such as those from the USGS/NASA Landsat program and European Sentinel program. Our journey using Google Earth will take us to Dubai, Austin, and each student's hometown.
Key concepts: supply and demand, economic growth, economies of scale
Objectives:
- Understand how Dubai thought outside the box to expand its supply of land.
- Grasp the importance of economies of scale in lowering costs.
- Demonstrate that many areas are not economically dynamic.

Materials:
- Ability to project Google Earth in front of the class
- A whiteboard and markers

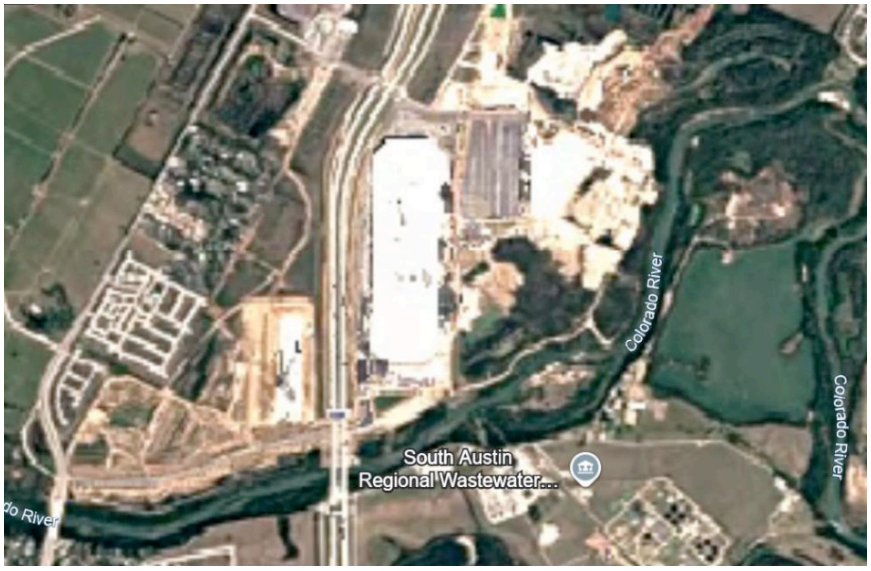
3.1 The miracle of Dubai
Figure 13



A. Go to the Google Earth website. Click on the time-lapse button.
B. In the search bar, type in "Dubai, United Arab Emirates." You will be transported around the globe to Dubai, where the satellite images show the creation of new land in the Persian Gulf. Allow the time lapse to play through at least two times.
C. Now visit the Burj Khalifa website. Explore the website with your class or ask them to work in small groups and explore on their own for three to five minutes. After the exploration, ask your students how many of them would like to visit Dubai and tour the Burj Khalifa.
D. Class discussion
D.1 Play this video about Dubai:
https://www.youtube.com/watch?v=VE75g0frvr4.
D.2 Ask your students the following questions:
● What factors contributed to this radical transformation?
Answer:
Strategic geographic location: Dubai's position between Europe, Asia, and Africa made it an ideal logistics and transportation hub. The city capitalized on its location by developing world-class ports (Jebel Ali Port) and airports (Dubai International Airport), which now serve as global gateways for goods and people..
Oil wealth as a catalyst: Oil revenues from the 1970s were strategically reinvested in infrastructure—roads, ports, power plants, and airports—which laid the foundation for future non-oil growth.
Economic diversification: The creation of free zones like Jebel Ali Free Zone (1985) offered 100 percent foreign ownership, tax exemptions, and minimal regulation—attracting multinational corporations and entrepreneurs.
Open economic policies: Dubai adopted a liberal economic model with minimal taxation, free trade, and open immigration policies. This openness made it a magnet for foreign investment and labor, with expatriates now making up nearly 90 percent of the population.
● What are the most important industries in Dubai?
Answer: trade and logistics (Jebel Ali Port and Emirates Airline); tourism and hospitality; real estate and construction; financial services; technology

3.2 Austin, Texas

Figure 14



A. Return to the Google Earth website. Click on the time-lapse button.

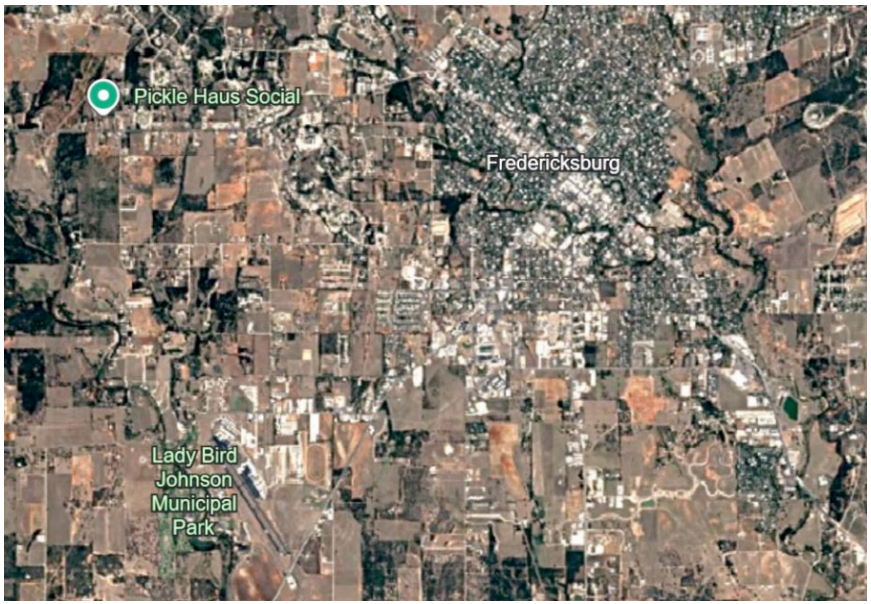
B. Type "Austin, Texas, USA" into Google Earth. Click on the time-lapse button. Over the past four decades, from 1984 to 2024, Austin has transformed from a modest city into a dynamic and flourishing metropolis. Originally recognized for its rich cultural heritage and vibrant music scene, the city expanded rapidly in population and influence. A surge in technology and business investment sparked a robust economic boom, attracting major corporations and innovative startups alike. The growing job market and entrepreneurial spirit propelled urban development, fueling residential and commercial expansion. Today, the city stands as a symbol of economic dynamism. Allow the time lapse to play through at least two times. On the second time through, note that a large building appears in the southeastern quadrant.

C. Now type "Tesla Giga Factory" into the search bar. Zoom in to see the scale of the building relative to the highway and vehicles in the parking lot. The Giga Factory is the fourth-largest building in the world. Ask your students to try to explain why the Giga Factory is so big compared with other manufacturing facilities. Encourage your students to use their economic vocabulary when they answer. Possible answers include: (1) Battery production requires massive scale compared to the rest of the automobile and energy sector. (2) The factories also employ a vertical integration strategy, meaning the

company controls nearly every step of the production process, from raw materials to finished products. (3) The facility uses renewable energy to fuel operations.

3.3 Find your hometown

Figure 15



A. Find your hometown on Google Earth. Type your home address into the search bar. Click on the time-lapse button. Zoom in to see your street and zoom out to see your community. Find your local grocery store and some of your favorite local landmarks. Share your hometown images with one of your friends. Allow students five to seven minutes to complete the task.

B. Bring the class together to project a few of the hometowns in front of the class. Begin by asking whether there is someone from a small rural town that would like to share where they are from. Next, ask for someone who lives in a rapidly growing area who would like to share. Finally, ask a third student to share something from their hometown that really stands out on Google Earth.

C. Give each student five to seven minutes to write a 250-word paragraph explaining why their hometown is either dynamic or stagnant. They should explain their answer by describing how much change they observed when viewing the time lapse.

3.4 Play this Kahoot: https://create.kahoot.it/creator/8e3df18d-25ab-4695–8e33-ee59974c319b

1. Dubai has expanded to the ocean and the desert. Where are property values the highest?

Answer: By the ocean. The supply of oceanfront land is limited compared to the supply of land inland. Oceanfront property is also much more expensive than property inland because the demand to live by the water is greater as well.

2. How does the ticket price to the Burj Khalifa observation deck compare with other iconic buildings across the world?

Answer: Prices are about the same as other iconic tall buildings.

- Empire State Building, New York: Tickets start at $84 for the 86th floor and $119 for the 86th and 102nd floors.
- Lotte World Tower, Seoul: The observation deck, called Seoul Sky, is on the 118th floor.
- Canton Tower, Guangzhou: The observation deck is on the 108th floor.
- Burj Khalifa, Dubai: The observation deck is on the 148th floor.

3. What challenges do you think Austin faced as it grew so quickly?

Answer: There are many considerations. With more people, congestion on the roads quickly became a major issue. Building new roads takes time, and Austin's highway system was unable to keep up with the increased road usage. Another difficulty was the lack of housing. Increased demand for housing caused prices to rise dramatically. More people also meant more demand for schools, medical services, police, fire stations, and the like. In addition, many people valued the old Austin, which had a distinctive "weird culture."

4. Why do you think the Tesla Giga Factory is so big? Use economic vocabulary in your answer.

Answer: Tesla could build batteries in a smaller facility, but the cost would be higher. The goal of the factory was to scale up production, increase automation, and allow for additional employee specialization. All of this allows Tesla to reduce costs.

5. What is the connection between population and economic dynamism?

Answer: The growth rate is more important than how many people live in an area. Often it seems like large cities are more dynamic than smaller population centers, but this is not necessarily true. Be careful: Many large cities are *not* dynamic, but static. Instead look at the rate of change in the population.

IV. Conclusion

Images provide a compelling lens through which to visualize the process of creative destruction, a term coined by Joseph Schumpeter in 1942. They document not only the physical transformation of industries, cities, and technologies but also the human experiences intertwined with economic change—innovation, displacement, and adaptation. By capturing these moments, images offer tangible evidence of the forces of economic dynamism that drive growth. Our project builds on the insights of Howitt and Aghion (1992), humanizing their theory by illustrating how obsolescence and innovation coexist as engines of progress.

Through three immersive lessons, which examine the evolution of video games, visualizing city transformations through postcards, and exploring global change via Google Earth time-lapse imagery, we provide educators with tools to bring the concept of creative destruction to life. This perspective aligns with the work of Acchiardo et al. (2021), who use visual media to teach foundation-level economics in a way that resonates with a young audience. Together, these visual narratives allow students to see economic growth not as an abstract model but as a living process that continually reshapes the world around us.

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