Creativity and innovation in time-travel streaming series

Criatividade e inovação em séries sobre viagens no tempo

Creatividad e innovación en la serie de viajes en el tempo

Lisete **Barlach**[1]

Abstract
The article discusses, through the analysis of three time-travel streaming series, the importance of a "right" time for innovations. In ideational phase almost everything can be imagined, but the development and implementation of any innovation will be confronted with societal, economic and technological limitations of a certain historical time. The streaming series addresses innovations which were made possible in the future, as in "Outlander", or establish a dialogue between past and future, as in "Live up to your name". The main contribution of the article is to alert judges and evaluators about innovations ahead of its time, and to the permanent actualization of possibles, as a cognitive condition, that is, flexibility of thought.
Keywords: Innovation; possible; pseudo impossibilities; imagination.

Resumo
O artigo discute, por meio da análise de três séries de streaming de viagem no tempo, a importância de um momento "certo" para inovações. Na fase ideacional, quase tudo pode ser imaginado, mas o desenvolvimento e a implementação de qualquer inovação serão confrontados com limitações sociais, econômicas e tecnológicas de um determinado tempo histórico. A série de streaming aborda inovações que foram possíveis no futuro, como em "Outlander", ou estabelecem um diálogo entre passado e futuro, como em "Viva de acordo com seu nome". A principal contribuição do artigo é alertar juízes e avaliadores sobre inovações à frente de seu tempo, e para a atualização permanente de possíveis, como condição cognitiva, ou seja, flexibilidade de pensamento.
Palavras-chave: Inovação; possíveis; pseudoimpossibilidades; imaginação.

Resumen
El artículo discute, a través del análisis de tres series de transmisión de viajes en el tiempo, la importancia de un momento "adecuado" para las innovaciones. En la fase ideacional se puede imaginar casi todo, pero el desarrollo y la implementación de cualquier innovación se enfrentarán a las limitaciones sociales, económicas y tecnológicas de un determinado momento histórico. La serie de streaming aborda innovaciones que fueron posibles en el futuro, como en "Outlander", o establece un diálogo entre el pasado y el futuro, como en "Live up to your name". La principal contribución del artículo es alertar a los jueces y evaluadores sobre las innovaciones adelantadas a su tiempo, y a la actualización permanente de los posibles, como condición cognitiva, es decir, flexibilidad de pensamiento.
Palavras clave: Innovación; posible; pseudoimpossibilidades; imaginación.

[1]Psicóloga, Mestre e Doutora em Psicologia Social pela USP. Pós-doutora em Administração (FEA USP). Pesquisadora nas áreas de Criatividade, Resiliência e Comportamento Empreendedor. Consultora na área de Gestão de Pessoas. Docente da Escola de Artes, Ciências e Humanidades e do Mestrado Profissional em Empreendedorismo. Universidade de São Paulo, Brasil. ORCID: orcid.org/0000-0002-8499-7463. E-mail: lisbar@usp.br

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Introdution

Is there a right time for an innovation?

In 1828, Anyos Jedlik, a Hungarian engineer, physicist and priest, proved that electrical cars were possible. He created a primitive electric motor and it was capable to move a little vehicle. The prototype, although rudimentary, shed light to the potential of electricity as a source of propulsion. Even being a successful technical experiment, it has not transformed the industry.

Leonardo da Vinci designed the helicopter and the submarine, among many other inventions, but none of those means of transportation, common in 20th century, could have been an innovation with the technology and the materials available at 16th century. Drucker (1985) states that this is the reason why inventiveness of Da Vinci has not raised awareness of the society and the economy of that time.

Many other examples could be provided, illustrating the relationship among creativity, innovation and historical time.

This is one of the reasons to choose time-travel streaming series to begin the analysis. The article aims to discuss the gap between imagination – the creative phase of innovation - and its implementation in a certain historical time.

Time-travel streaming series

Any person who lived in the Middle Ages would consider impossible the very existence of a smartphone. Films and series regarding travel across time are illustrative about what is considered possible or impossible at each civilizational time.

This is a conceptual-theoretical study of streaming series on the theme of time travel. Three streaming series were selected for the analysis, all of them involving time travel.

Table 1.
Streaming series. Shows details about them.

Title	Streaming Channel	Year	Nationality	Synopses
Live up to your name	Netflix	2017	Korean	The best acupuncturist of Josen, Heo Him, finds himself traveling 400 years into the future, where he meets Choi Yeon Kyung, doctor in a modern hospital. Very interesting dialogues between acupuncture and occidental medicine.
The protector	Netflix	2020	Turkish	Discovering his ties to a secret ancient order, a young man living in modern Istanbul embarks on a quest to save the city from an immortal enemy.
Outlander	Netflix	2014	British – North American	Claire Randall is a nurse in 1945, mysteriously transported into the year 1743. Forced to marry Jamie Frazer, a Scottish warrior, she lives a double life and witnesses the most important events of Scotland history.

The starting-point of the present analysis is Piaget´s theory of possible, followed by Sternberg´s propulsion perspective on creative contributions. This last one is the basis for categorizing the series presented above.

Piaget´s theory of posible

Understanding the essence of something is crucial to analyze innovations, because of the trans-formation of the object, be it a new shape, color or packing, which will be called incremental innovations, or a radical, breakthrough change at its core substance / matter.

By distinguishing possibilities from pseudo possibilities, and necessities from pseudo necessities, Piaget et al (1986) open up new avenues for comprehension of innovative mindsets.

It is possible to classify these "subjective" impossibilities or pseudo impossibilities in two categories: a) the person believes, wrongly, that something is possible, and b) he (or she) believes it is impossible, because, supposedly, it corresponds to pseudo necessity[1].

In Piaget´s theory, reality is a subjective construction. In order to attain more objectivity in adult´s life, during his (or her) development, a child must overcome pseudo-necessities and pseudo-impossibilities, as a way to, mentally, form new possibles (Turchielo & Aragón, 2018).

According to this theory, an adult who overcomes those pseudo-impossibilities is more likely to maintain the flexibility of thought, be at his (or her) projects, or at coping with adversities, without stiffness they can cause.

Piaget and Feider (1985) studied the possibles and the necessaries, cognitively speak¬ing. According to the authors, the genesis of the possibles is related to the limitations the individual has to surpass, considering the initial indifferentiation among what is real, possible, and necessary.

In sum, **creativity and mental flexibility means continuous actualization of possibles, through overcoming pseudo-necessities** (Piaget et al., 1986, italics by author).

Thus, the cognitive processes involved in defining what is possible, and accepting what doesn´t have to be the old way, are crucial mental structures subjacent to innovations' decision making, as well as to recognition of creativity.

More about posible

In 2022, a group of important scholars of Psychology launched "The Palgrave Encyclopedia of the Possible", a comprehensive collection of studies covering various themes related to possible.

For example, Bjorneborn (2022, p.16) understands the concept of adjacent possible to designate "a set of possibilities available to individuals, communities, institutions, organisms, productive processes, at a given point in time during their evolution". This concept, according to the author, is useful for understanding how new possibilities emerge.

"Adjacent, i.e., nearby, possibilities constantly emerge in a multitude of settings for a multitude of entities. When these possibilities are explored, yet new possibilities emerge" (Bjorneborn, 2022, p.16)

Another definition states adjacent possible as "the set of things [...] that are one step away from what actually exists and that could be reached by the incremental recombination of the existing elements" (Gravino et at., 2019, in Bjorneborn, 2022, p. 17). Bissociation is the term used by Koestler (1964) to refer to this same phenomenon.

It was Stuart Kauffman who first introduced the term, referring to it as "the nature of autonomous agents and the worlds they mutually create". In his studies of the biosphere, Kauffman (2014, p. 4, in Bjorneborn, 2022, p. 19) "points to enablement as an evolutionary driving force. He outlines an explanatory framework for how 'actuals' emerge in evolution and constitute new 'boundary conditions that are enabling constraints' for new adjacent possibles, [...], new actualizations enabling yet new adjacent possibles".

For Sternberg et al. (2022, p. 1386), thinking about what is possible is thinking creatively, "projecting from what we know to what we do not know and only can imagine". Besides, "Creative thinking is thinking about what is possible and how it builds on and departs from what we already know and can do".

Sternberg et al. (2022, p. 1390) proposes a model based in the assumption that creativity does not vary only in quantity – more or less creative – but also in quality – and, thus, contributions can be differently creative. Next, this model is presented.

Sternberg´s propulsion perspective

Creativity can only be recognized in context: a specific time and place, an idea proposed by a particular individual in a particular field. Some creative contributions help us view the familiar in a new light. Others nudge the field a step further along a given path . Yet other innovations reject the familiar and abandon the path and can start an entirely new field (Sternberg et al., 2022)

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[1] In this case, the person believes that the substance, thing, person, or situation, needs to be that way (shape, color, matter, are examples of those "need to be" this way; the belief is that is how reality is, impossible to be changed).

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de Criatividade e Inovação
Iberoamerican Journal of Creativity and Innovation

The propulsion theory holds that "creativity can vary not only in level but also in kind" (Sternberg et al., 2022, p. 1386). Creative contributions can be viewed as of three kinds – paradigm-preserving, paradigm-defying, and paradigm-integrating, each of them described above.

The first one encompasses four kinds of creative actions: conceptual replication, redefinition, forward incrementation, and advance forward incrementation.

By repeating work or research that has been done in the past to examine the generalizability of previous conclusions, this is replicating. By seeing a new use for something old, one is redefying it.

A forward incrementation, by its turn, can be "an extension of an existing model of reasoning problems" (Sternberg et al., 2022, p 1387), while an advance forward incrementation goes ahead from the previous one, and, by such a large step from existing programs, can generate skepticism or refusal from a specific community or even from society, generally speaking.

The second type of creativity described by Sternberg et al. (2022, p. 1387), paradigm-defying one, involves three kinds of creative contributions, being them redirection, reconstructive / regressive redirection, and reinitiation.

By redirection, authors refer to realizing that something or a whole field is developing a wrong direction and needs a new one.

A reconstructive / regressive redirection implies that the necessary action is moving in a new direction but "taking off from where it was in the past rather than from where it is now" (Sternberg et al., 2022, p 1387).

Finally, reinitiation takes place when "a creative individual essentially decides that a field not only needs to redirect itself but actually needs to start over".

Regarding the third type of creative contributions, Steinberg et al. (2022, p. 1387) describe it as a synthesis of two or more disciplines or paradigms.

The propulsion theory sheds lights on overcoming impossibilities and opening up to new possibilities, as Piaget´s approach to creativity, presented above.

The definition of possible remains the foundation of the following analysis of streaming series addressing, all of them, fictional themes, especially time travel. The three series chosen for the present study are introduced and reviewed through Piaget´s and Sternberg´s lens.

Method

As a theoretical study, the streaming series are analyzed through Sternberg´s propulsion theory, with its various categories, as it will be presented above.

Analyzing streaming series on time travel

It is well-known that science fiction anticipates new possibles, simulating the overcoming of impossibilities or even enhancing researches to build up new paths on a certain research field. The series presented above anticipate events of the future, or introduce combinations between themes of past and present, or approach what remain constant in-between different times.

Series 1: Outlander

In the series Outlander, the main character, Claire, by returning in time to 1743, gets pregnant of the warrior Jamie, has the baby when back to her own time, and the child, fruit of their union, when adolescent, goes back in time to meet her biological father, Jamie.

A conception of a baby between two persons of different times has no precedents in real world. Nevertheless, it is conceived in the author´s mind, as imagination (Vygotsky, 2004).

In Outlander, time travel is a complex phenomenon involving a genetic predisposition, a portal-like structure of stones, and a form of "steering" through thought or other methods. It's implied that one cannot travel into their own past and that there are potential risks, including getting stuck between time periods.

Time travel appears to be a hereditary ability, meaning it's passed down through families. The stones act as a portal or gateway, allowing individuals to travel between different time periods. Time travelers can "steer" their journey by focusing their thoughts on a specific person, place, or time. There are limitations on where and when time travelers can go, such as the inability to travel into their own past.

The author states: the "linkage between fantasy and reality is quite different. It involves a more complex association, not between the elements of an imaginary structure and reality, but between the final product of imagination and some complex real phenomenon". The author explains that "this is the result of creative activity of the imagination. It does not reproduce what I perceived in my previous experience, but creates new combinations from that experience" (Vygotsky, 2004, p. 10).

Vygotsky adds: "This type of linkage is made possible by virtue of the experience of someone else or so-called social experience. If no one had ever seen or described the desert or the French

revolution, then it would be impossible for us to form an appropriate image of either one. It is only because in these cases my imagination operates not freely, but directed by someone else's experience, as if according to someone else's instructions, that we can obtain the result we get in this case, that is, the fact that a product of the imagination corresponds to reality" (Vygotsky, 2004, p 11).

At a deeper level of analysis, it is possible to state that the conception of a child by parents of different historical eras could be hidden at collective unconscious, as a possibility. That would explain an appellant theme of romantics, the marriage between nobles and commoners, rich and poor people, black and white, and so many others.

Back to the series, the main character, Claire, having lived in the future and worked as a medical practitioner, introduces certain techniques with her patients, as anesthesia, which will only be used in surgeries in 1846. The initial surprise with that "mysterious" technique gave place to a denial and the case evolved to a condemn of Claire as a witch, revealing some of the common possible reactions to innovation over time.

She also brings from the future the use of matches, which came to be in use only in 1827. As it is well-known, matches facilitated enormously daily life since its "invention". Nevertheless, this "futurist" product was not immediately accepted at this time, except for her husband, who, knowing she brought it from the future, was positively surprised. This is another important aspect of acceptance of innovations, in general, that is, closeness and emotionally connections will facilitate the "inventor" path to get recognition for the invention.

Through Steinberg's´ lens, the series Outlander addresses both as a paradigm-defying and as a paradigm-preserving kind of creative contribution.

The main character, Claire, defies a paradigm by trying to reinitiate medical principles that prevailed at the past time, by introducing anesthesia and other common practices at the future. But, at the same time, after being treated as a witch and facing death, she steps back to the current medical paradigm, preserving it.

Of course, she feels sad by the fact that medical practices of the future could save lives, but she sees the dangerous it can be to defying paradigms.

Also in real life, Copernicus, who formulated a model of the universe placing the Sun, rather than Earth, at its center, suffered from defying current paradigm at that time, being buried, getting acknowledge of his discovery only centuries after his death.

Series 2: The protector

Mysterious objects, sold at Grand Bazar in Istanbul, guides the main character, Hakan Demir, to a different time, realizing, during his journey, the attempts of a "group" to destroy the city and gain power over the citizens.

He is able to live simultaneously in the past and in the present time, highlighting, through landscapes of both past and present, the historical sites of Istanbul.

In "Protector (novel), time travel is primarily used as a plot device for the characters to explore and learn about the past. The Protectors, a group of alien beings, initially settled on Earth and eventually began using a laser to send a message back to their homeworld. Their time travel involves both physical and temporal displacement, allowing them to revisit past events and learn from them.

In the series, Hakan Demir, an Istanbul shopkeeper, discovers he's connected to the Loyal Ones, a secret order that protects the city against its enemies. He must embrace his family's legacy as the Protector and kill the Immortal to prevent the city's destruction.

The title of the series, The Protector, regards a typical virtue of a hero. Protecting represents a paradigm-preserving kind of contribution, that is, in Sternberg´s words (Sternberg et al., 2022, p. 1386), "a repeating work that has been done in the past but with meaningful changes to examine the generalizability of the previous work".

The main character, the hero, goes back and forth in time, aiming to protecting the city from its destruction. He faces difficult obstacles to defend Istanbul, its citizens, and his own clan against the enemies, fighting with a variety of arms, but, importantly, with a special kind of power, whose symbol is a light in his chest, possibly representing love, compassion, and other emotional qualities of his heart, actualized in time, but preserving the main characteristics of protection as a virtue.

Jung´s concept of archetypes also can help understand the maintenance of the feeling through the adversities the hero has to face. The bravery of the hero is a component of the archetype, one of the main characteristics of a hero and, as an archetype, it is always there, regardless historical eras or circumstances.

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Through Steinberg's´ lens, the small changes suffered by the feelings of compassion, protection and love for the city can be seen as forward incrementation, "an extension of an existing model of reasoning to new kinds of reasoning problems" (Sternberg et al., 2022, P. 1386).

Going back and forth in time, stopping from time to time in the present, the main character receives feedback from members of his clan, and this supportive behavior gives him the opportunity to reevaluate his attitudes, making the necessary changes in his actions, feelings and behaviors.

Humanitarian feelings cross time and throughout one of its vehicles, the hero, get small changes in order to adapt to circumstances, not defying the core paradigm at a given historical time.

Humanism is philosophical approach that can be seen a paradigm and the series addresses its preservation.

Series 3: Live up to your name

Live Up to Your Name is a South Korean television series that explores time travel. It features a traditional Korean doctor from the Joseon Dynasty who, when facing danger, is transported to present-day Seoul. There he encounters a modern surgeon, leading to a clash of ideas and a unique relationship as they navigate the challenges of different eras.

Dialogues between doctors of different times and civilizational eras are illustrative of what occidental medicine left behind as affirming superiority of modern science over acupuncture and herbs, for example. It helps to see medicine in perspective, rather than as linear evolution.

At a certain point of the series, both doctors, one from previous historical time, and the other, form contemporaneity, acknowledge some of the common medical foundations, becoming able to see, through a partnership, the worth of modern techniques, like anesthesia, as well as the value of acupuncture.

The third type of creativity mentioned by Steinberg (Sternberg et al., 2022, p. 1387), paradigm-integrating kind of creative contributions, representing a "uniting of work from two or more disciplines", is what best describes the series Live up to your name. By imagining the synthesis between old and contemporary types of medicine, and by seeing the benefits of each of them, plus highlighting the good they can bring up as a joint practice, the series navigates through a totally exciting new approach.

Conclusions

In order to consider anything as new, individuals have to accept it as possible. To consider it as innovative, it has to be seem as necessary. These two concepts, derived from Piaget´s theory (1987), are key elements for the analysis of innovations, so relevant in contemporary scenarios. This theoretical framework was helpful to explain how "opening up for new possibles" implies overcoming pseudo impossibilities, and how possibilities are built up alongside individual and social development. In short, an innovation has to be considered possible, feasible and necessary. Thus, the cognitive processes involved in defining what is possible, and accepting that something doesn´t, necessarily, has to be the old way, are crucial mental structures subjacent to innovations' decision making.

The study adopted Piaget´s theoretical framework to investigate cognitive processes involved in time-travel gender of cinema. Films and streaming series regarding travel across time are illustrative about what is considered possible or impossible at each civilizational time. Through imagination, film makers are able to develop stories which bring about new possibilities, as well as the overcoming of pseudo-impossibilities. Due to the importance of innovation in contemporaneity, the correct evaluation of possibilities is a key-element to study creativity. Piaget´s theory, as well as Steinberg´s propulsion perspective, regarding this issue, contributes for its better understanding.

A repeated theme in all series is the previous knowledge of what is coming and the possibility – or impossibility – of changing the past. This brings up the concept of necessity, very important topic in Piaget´s work. For him, necessity is also dependent on the subject and not inherent to real.

Time-travel gender of films explores, through imagination, what transcends actual possibilities, bringing up inventions that would be possible only in the future or presenting what was possible in the past, erasing curiosity, enhancing creativity, by overcoming pseudo-impossibilities or pseudo-necessities.

As well as many other series and films of time travel gender, such as Blade Runner, Back to the Future, and Star Track, the three series analyzed in the present study deal with the "problems and promises offered by science, technology and rationality in an imaginative context given shape by the aims of the film industry" (King & Krzywinska, 2000, p. 2).

As says Barlach (2009): Leonardo Da Vinci designed the helicopter, but there was not available technology to develop it and transform it into a commercial product. In his imagination, he foresaw something that would take many years to become "real", meaning that what he saw as possible, for him, was real in his imagination. In other words, he was ahead of his time.

As well as many science fiction films and books, Da Vinci´s works anticipate what was going to be possible and real in a different time.

The study of the three series – Outlander, The Protector and Live up to your name – are good examples of "impossible" themes in the present which should be possible in future times, depending, among other things, on technology development.

The study may contribute to understand that some innovations could be imagined but are ahead of its time and, thus, have to be considered as future possibilities. Judges and evaluators should be prepared to see innovation beyond their actual time.

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