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Featured Address

Intelligence and creativity in the space-time continuum for education, business, and development☆,☆☆

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ABSTRACT

In this paper, we address the relationship between the intelligence and creativity constructs, by providing equal-level definitions and a parsimonious description of context, allowing the identification of situations in which either one or the other construct prevails, as well as situations in which they overlap and collaborate. The description of context is performed by introducing the metaphor of the space-time continuum, crossing the dimensions of conceptual space S and available time span T, each one varying in continuity from extreme tightness to extreme looseness. The usefulness of the space-time continuum is not limited to the pure comparison between intelligence and creativity, but it can be extended to specific domains. We consider here design of education systems, management styles in business, and development of a creative identity and career. In each case, conceptual space S and available time T take on different and specific nuances, allowing for an in-depth analysis of situations as well as the design of novel approaches. Several paths for future research are highlighted.

Bridging the fields of intelligence and creativity studies

What differentiates Homo Sapiens from other species is not that we have culture, but the fact that our culture grows, and in an exponential fashion (Boyd & Richerson, 1996; Enquist et al., 2008). This fundamental characteristic of our species can be attributed to the following factors: the ability to consciously reflect upon our experiences, the capacity to communicate our reflections through language, the ability to learn from others without a need for direct experience, the capacity to reason and make decisions based on knowledge, and finally our creative ability to generate ideas with a potential for originality and effectiveness starting from extant and shared knowledge. To be concise, all of the above abilities can be ascribed to our intelligence and creativity constructs. As shown in Enquist et al. (2008), the result is that in all disciplines of human knowledge a trend for exponential growth in the number of cultural products can be observed, and this clearly generates an epistemological problem of complexity in general, and specifically in science.

As clearly indicated by Henri Poincaré in his book Science and Method (Corazza & Lubart, 2019; Poincaré, 1914), dealing with this fact has very serious consequences (Corazza & Lubart, 2019, p.37): "*In proportion as the science develops, it becomes more difficult to take it in its entirety. Then an attempt is made to cut it in pieces and to be satisfied with one of these pieces — in a word, to specialize. Too great a movement in this direction would constitute a serious obstacle to the progress of the science. As I have said, it is by unexpected concurrences between its different parts that it can make progress. Too much specializing would prohibit these concurrences.*" In essence, any field of science is cut into smaller and smaller sub-fields, and scientific communities are built within these very confined domains, with the risk of losing sight of the larger picture.

This risk is inherently present as well for the scientific communities respectively specialized in the study of intelligence or in that of creativity. Fortunately, there is also a growing literature attempting to bridge this gap by addressing the relationship between the fundamental constructs of intelligence and creativity, starting from the pioneering contributions by Getzels and Jackson (1962), Wallach and Kogan (1965), Guilford (1967), and then on to those by Sternberg and O'Hara (1999), Lubart (2003), Kaufman and Plucker, (2011), Nusbaum and Silvia (2011), Karwowski et al. (2016), Benedek, Jung, and Vartanian, (2018), and the references therein. However, the more this relationship is investigated, the more nuances are found, and the end of this fascinating scientific effort is far from being reached. As Sternberg put it (1999, p.81): "*Despite a substantial body of research, psychologists still*

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have not reached a consensus on the nature of the relation between creativity and intelligence […]. *All possible set relations between creativity and intelligence have been proposed, and there is at least some evidence to support each of them.* […] *The question is theoretically important, and its answer probably affects the lives of countless children and adults. We therefore need elucidation of good answers as soon as possible.*" The possible set relations are: creativity is a subset of intelligence; intelligence is a subset of creativity; creativity and intelligence are overlapping sets; creativity and intelligence are essentially the same thing (coincident sets); and creativity and intelligence bear no relation at all to each other (disjoint sets). In essence, anything appears to be possible, and there is a strong need for clarification.

In line with (Sternberg, 1999), this paper resonates with the idea that understanding the relationship between creativity and intelligence has a theoretical interest of its own, and in addition it can positively affect the lives of children through balanced approaches to their development and education, as well as that of adults in the professional domain, through novel approaches to management. All of this is done by first analyzing an innovative approach to the study of this relationship, based on the concept of the space-time continuum (Corazza & Lubart, 2020, 2021).

Intelligence and creativity: the need for symmetric definitions

Both intelligence and creativity are very complex phenomena, that can be analyzed at multiple levels: neuroscientific mechanisms, cognitive and emotional components, individual behavior, team behavior, sociocultural aspects. The first requirement in order to investigate their relationship is therefore to work at the same level for the two constructs, preserving a sort of symmetry of analysis. As an example, it would be asymmetric (not necessarily incorrect, but possibly misleading) to measure cognitive components of intelligence and creative achievement in a lifetime. Whereas the former measure occurs in a definite moment of time and in a tightly controlled environment, the latter gathers episodes that were scattered in time and that were immersed in time-dependent sociocultural conditions (such as, for example, the professional career). A similar argument was made in Epstein (1979) with regards to the study of personality, contrasting single measures against trials over time windows. The best way to ensure this symmetry is to provide explicit definitions for the two constructs. Indeed, if no definition is provided then the analysis relies completely on the selected operational measures, and it can easily happen that the results will change by changing measurement approach. This problem has been clearly addressed by Silvia (2015), who indicates how the correlation coefficient between intelligence and creativity measures is heavily affected by modeling (e.g., adopting latent variable approaches) and scoring (e.g., abandoning relative frequency and using consensual assessment for alternative uses in divergent thinking measures). In addition, it should be noted that our possibility of classifying a behavior as intelligent or creative is strongly dependent on the characteristics of the embedding context, so that our definitions should mention explicitly this dimension, which is a key in this article.

For the purposes of this symmetric analysis, the following definitions are adopted (Corazza & Lubart, 2021):

- Intelligence is a context-dependent phenomenon requiring goal-driven effectiveness
- Creativity is a context-dependent phenomenon requiring potential originality and effectiveness

As shown in (Corazza & Lubart, 2021), these definitions are compatible with a multitude of definitions that can be found in the literature for the two constructs, but they enjoy symmetry and commonality of terminology. As can be immediately seen, adopting these definitions creates a theoretical framework in which the two constructs have both similarities and differences, pointing to the idea that intelligence and creativity are overlapping but also distinct constructs.

In terms of similarities, both phenomena are defined as context-dependent: indeed, the possibility to distinguish (or overlap) the two constructs is related to our ability to characterize/realize contexts with specific constraints. This is in fact the purpose of the space-time continuum model, as we will show in the next section. Also, both phenomena require effectiveness, but with different qualifications. To be intelligent, one should achieve his/her goals in a very effective way. To be creative, one should generate ideas that have high potential effectiveness in the domain of interest, and the potential might be turned into achievement or inconclusiveness depending on sociocultural conditions. This interpretation is in line with the dynamic definition of creativity (Corazza, 2016).

In terms of differences, intelligent behavior requires the definition of clear goals that drive action. On the other hand, creativity does not necessarily require clear goals a-priori, as one might be exploring freely a conceptual space, perhaps finding an outcome that was not sought initially (serendipity). At the same time, creativity can also be goal-directed, as for example in creative problem solving. Also, creativity requires potential originality, a fundamental requirement that contains novelty, authenticity, and surprise. Intelligence does not necessarily require any form of originality: one can provide a very clever but previously known solution very quickly, showing high intelligence unrelated to creativity. At the same time, intelligence can also lead to the generation of original solution, for example in the case of highly complex yet unsolved problems.

The above discussion highlights the complexity of the relationship between the two constructs, and the need for a modeling tool to aid clarification and then guide the design of methodologies.

The Space-Time Continuum: a useful framework for analysis and design

The description of the context embedding an intelligent and/or creative behavior might appear to be an overwhelming task, as there exist infinite possible variations on the theme. There is a clear need for a parsimonious model, one that is able to capture the few essential elements that are the minimum necessary for the purposes of understanding the relationship between the two constructs. For any specific episode, we identified this parsimonious set as containing only two variables: the *conceptual space* S in which the idea, solution, action is sought for and/or performed, and the *available time span* T for the episode under consideration (Corazza & Lubart, 2021). The characteristics of these space and time variables can be described as a continuous variation from extreme tightness to extreme looseness.

The concepts of tightness and looseness have been inspired by the work of Gelfand et al. (2011), who introduced them for the description of the characteristics of societies. A tight society is one where norms are very rigid and stringent, and punishment is severe for those who do not adhere. Behavior is encoded by conventions and actively monitored by institutions and peers. On the contrary, in a loose society norms are flexible and weakly applied, errors and violations may be tolerated, and behavior tends to be free and informal. A loose society is not necessarily chaotic but certainly less orderly, less structured and less controlled than a tight one. Gelfand et al. (2011) were able to show that this method of describing cultures in societies provides a fresh view with respect to other, previously adopted models, such as for example collectivism vs. individualism.

Now, it is possible and quite interesting to extend the application of these concepts of tightness vs. looseness to space S and time T. A tight conceptual space is one where a single correct solution is foreseen, at most with few variations on the theme, with strong constraints, and with little or no tolerance for ambiguity and errors. Following Perkins (1992), this condition can be classified as a Homing space, whereby the problem itself contains and indicates the solution. On the other hand, in a loose conceptual space many alternatives are contemplated, without pre-conditioning the outcomes of the search and with ample possibility for discontinuities, requiring high tolerance for ambiguity. This could be classified as a Klondike space (Perkins, 1992), which should be searched

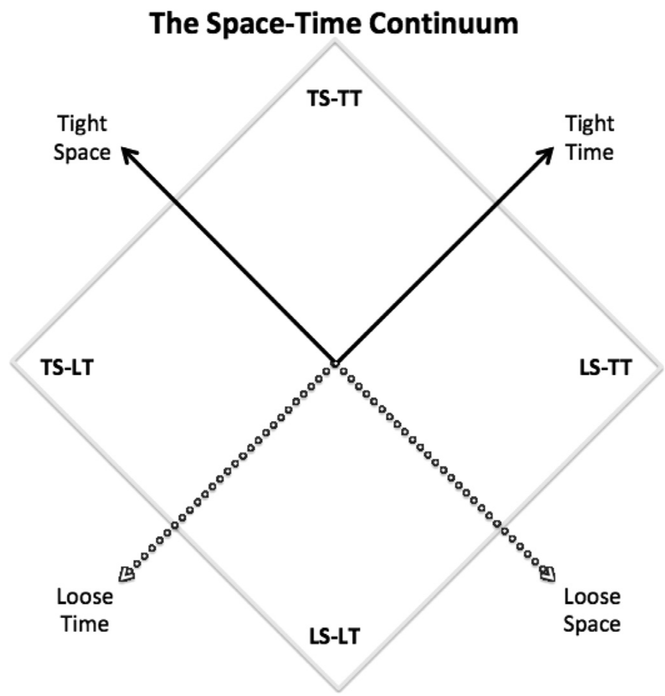

Fig. 1. The Space-Time Continuum (from Corazza & Lubart, 2021, with permission).

with flexibility, curiosity, and an adventurous attitude. Turning our attention to the other dimension, under tight T the context imposes strict limits on the time interval for expected outcomes, and any delay is punished. Distractions are detrimental, and in extreme conditions it could even be fatal. At the opposite extreme, loose time T allows ample periods of time for the process, for which planning is not at a prime, and in any case, there is tolerance for delays.

Following Corazza & Lubart (2021), we can now form the space-time continuum by mapping space S and time T on two orthogonal tightness-looseness axes, see Fig. 1.

The space-time continuum contains an infinite number of points, corresponding to infinite contextual models with variable levels of tightness-looseness in space and time. However, for the purpose of a simplified analysis it is very useful to concentrate on the four quadrants: tight space-tight time (TS-TT), loose space-loose time (LS-LT), loose space-tight time (LS-TT), and tight space-loose time (TS-LT). Whereas the interested reader is directed to Corazza & Lubart (2021) for a detailed discussion, we briefly summarize here how these four quadrants can help in understanding the relationship between intelligence and creativity.

The TS-TT quadrant represents contexts that are purely tight, in both space and time. In these conditions, it is extremely important to have clearly defined goals that must be pursued and achieved in minimum time. Therefore, intelligent behavior (context dependent goal-driven effectiveness) is perfectly adaptive and wanted in the TS-TT quadrant. However, in this quadrant creative behavior is maladaptive. Solutions with high potential originality are not required and likely not welcome, given the tight epistemological constraints in the conceptual space, and there would be a price to pay for not providing the solution in due time. Essentially, the intelligence construct dominates in the TS-TT quadrant, and creativity could at most be a subset of characteristics that lead to behaviors that are normally criticized.

The situation reverses in the LS-LT quadrant which is purely loose. In this context, free and unscheduled exploration is possible, a condition which is quite rare in modern societies, at least for developed countries. Pressure on the person and on the process is very low, and this can have both positive and negative consequences: there is a high potential for originality, but also a danger for a waste of time and resources. According to the dynamic definition of creativity provided above, both creative achievement and creative inconclusiveness are contemplated by the creative process, which can flourish in this quadrant. On the other hand, in this context there might be ambiguity in the definition of the goals. Given the lack of pressure, even if the goals are defined and efficiently pursued, the outside world might not notice, deferring satisfaction indefinitely. Given the potential negative impact on clarity and satisfaction, one might deem it wiser and more intelligent to change context. In conclusion, in the LS-LT quadrant creativity is adaptive, whereas intelligence is likely to produce a move to another quadrant.

Considering now the two hybrid quadrants, in which one of the two dimensions is loose and the other is tight, they represent contexts in which intelligence and creativity overlap and collaborate. In the LS-TT quadrant, degrees of freedom are present in the conceptual space to allow exploration with divergent thinking, but this search must be completed brilliantly within the allocated time. In the TS-LT quadrant, time is loose which allows for reflection, tentative trials, learning from errors, but space is tight and therefore the eventual solution must be brilliantly justified through correct reasoning. It is immediate to see how in these two families of contexts the constructs of intelligence and creativity both play a fundamental role.

More details on the mapping of intelligence and creativity theories, models, and measurement approaches in the quadrants of the space-time continuum can be found in (Corazza & Lubart, 2021). This is a general discussion, which in a sense does not depend on age and domain of application. What we intend to do here is show how the theoretical framework provided by the space-time continuum can be usefully applied to specific domains of psychological studies: education, management, and development. These applications are preliminary and intended to open the way to future research, definitely including empirical investigations.

The space-time continuum for education systems

As discussed in (Corazza et al., 2021), the Traditional Education System (TES) has been essentially designed to obtain standard levels of homogeneous knowledge for all students, irrespective of their social class. TES foresees strictly distinct disciplinary domains, based on the idea that separating subjects would increase the efficiency of the learning process. The focus of education is academic learning, a process involving the acquisition and development of various competencies that are relevant for intelligence, creativity, and beyond. In this article, the discussion on the ST-continuum for education is limited to **academic learning** and creativity, whereas its broader extension is left for future work. TES is clearly geared towards the development of the academic learning of students, expressed through competencies in the various disciplines, with very little space for creativity, usually confined to artistic subjects. However, both the OECD (Organisation for Economic Co-operation and Development) and the World Economic Forum (WEF) are pointing to the fact that creativity is a fundamental skill in the 21st Century (OECD, 2018; WEF, 2019), and therefore education systems should undergo a re-design towards new models.

In the scientific literature, many contributions address the introduction of creativity in education (see, for example, Beghetto, 2019; 2021; Beghetto & Kaufman, 2016; Ferrari & Wyse, 2016; Hennessey, 2015; Jeffrey & Craft, 2004; Renzulli & Renzulli, 2010; Runco, 2003; Sawyer, 2015; Smith & Smith, 2010; Torrance, 1963; Wetsby & Dawson, 1995). Regretfully, trying to introduce creativity in education systems is often met with resistance by institutions, school principals, and even teachers, perhaps surprisingly. The typical argument is that this possibility appears to be valued but not actively addressed, because there are not enough time and resources, and there might be a danger to lose control and to miss the learning objectives. We feel that these negative reactions might also be spurred by an approach that tends to depict the TES as 'completely wrong', but this is a message that is hard to accept and actually not true. There is a need for balance: the target is not to develop creativity and forget about academic learning, but to design a system that is geared at the joint development of both academic learning and creativity. This is where the space-time continuum can be very useful.

In order to apply our theoretical framework to the education domain, as done in (Corazza et al., 2021) the conceptual space S must be interpreted as the pedagogical space, corresponding to curricula, teaching and learning methods, evaluation practices, organization of classes, as well as relationships between teachers and students. On the other hand, time T must be interpreted as the temporal organization of teaching-learning and assessment activities, short, medium, and long-term learning objectives, and the pace of learning. Now, pedagogical space S and time T can both be seen from the perspective of tightness and looseness.

In a tight pedagogical space, standardized curriculum organization models are at a prime, with rigid disciplinary didactics and teaching-learning methods, with standardized testing. The teacher's posture is dominant: the teacher knows, the pupil learns. Conversely, a loose pedagogical space might not be compliant with a standardized curriculum, adopting a flexible study plan open to uncertainty. Evaluation should be dynamic, open to discussion, tolerant with different achievements depending on individual differences. The teacher's role is not to dominate but to mentor, help and trust students.

Considering pedagogical time, tightness produces linear organizations of teaching-learning activities, with fixed milestones, with different time slots for different disciplines, each assessed separately. Delays are not tolerated. Tightness in pedagogical time allows easier management of study plans, teaching assignments, and assessment. On the other hand, loose pedagogical time allows for non-linear and dynamic organizations of teaching-learning activities. Schedules may be adapted to the interests of students, as well as to their differential abilities to learn. Extended projects that foresee collaboration between students are welcome, mentored by a group of teachers with interdisciplinary and trans-disciplinary points of view.

Now, by crossing pedagogical space and time we obtain the space-time continuum for education, characterized by four quadrants that correspond to four quite diversified educational and pedagogical styles (Corazza et al., 2021). The resulting space and time pedagogical quadrants offer educators new possibilities for considering how they might blend *pre-determined* (i.e., tight) and *to-be-determined* (i.e., loose) features in the design of creative educational experiences and assessments of those experiences (Beghetto, 2021).

The TS-TT pedagogical quadrant corresponds to a canonical rigid teaching-learning system, in line with TES. The organization follows a top-down structure, and the general objective is to achieve homogeneous competence at fixed milestones in time. Focus is on academic learning, creativity is mainly a distraction and a nuisance. This approach does have some positive features, but it is clearly not the only possible model. In LS-TT pedagogical quadrant, we maintain a traditional schedule for teaching and assessment, but the educational space is opened to diversified experiences, alternative teaching and learning styles, providing room for creativity in both teachers and students. Following this approach, it is possible to start from TES and add specific courses and experiences that stimulate creativity. The focus is on both academic learning and creative potential, with a very gradual approach, and perhaps the easiest to be accepted by incumbent institutions. In a dual way, the TS-LT pedagogical quadrant foresees a traditional organization in terms of disciplines and learning objectives, but thanks to looseness in time it allows longer-term experiences, which for example can give life to various forms of project-based learning. The focus is on both academic learning and applied creativity. Finally, the LS-LT pedagogical quadrant corresponds to more unconventional spatio-temporal teaching-learning models, open and dynamic, allowing invention and experimentation of radically new approaches, perhaps post-disciplinary (Darbellay, 2015).

As also discussed in (Corazza et al., 2021), we do not think that any single quadrant would represent the ideal pedagogical solution. Rather, an education system that is organized in such a way that all four quadrants are visited, with different and possibly dynamic proportions of time and resources, is more likely to represent the optimum. Indeed, there are times when it is most effective and efficient to teach using very tight space-time constraints (e.g., learning safety procedures in a chemistry lab). There are other times when it is more appropriate to design learning experiences using looser space-time constraints (e.g., a year long, student-driven project). We feel therefore that the space-time continuum offers educators, educational leaders, and designers of learning experiences a practical and flexible framework for exploring and designing new pedagogical possibilities across the four quadrants.

Given the early stages of this work, the discussion about the principles of such an organization and the optimal proportions between the four quadrants in education is completely open. We invite researchers and practitioners working in the field of education to join us in considering how this framework might be applied, refined, and further developed in educational settings.

The space-time continuum for business

In the domain of business, due to the faster and faster pace of economic development mainly driven by new technologies, one of the most important keywords is undoubtedly 'innovation'. All companies know that it is not enough to thrive in the short-tem; it is also necessary to devote resources to medium-long term developments, in order to ensure survival. On the other hand, innovation is always related to a form of risk, given that one is abandoning at least part of its previously successful paths. Therefore, innovation involves leadership, because the bolder the challenge, the more important it is to be able to gather support by convincing others of one's vision.

It is for this reason that recently Rosing et al. (2011) have conducted a meta-analysis of the literature on leadership and innovation, considering the fundamental concepts of exploitation (continuing to exploit the existing portfolio of products and services) and exploration (opening up the focus to allow for higher and higher levels of innovation). As a result of this analysis, Rosing et al. (2011) propose a theoretical framework for leadership in innovation that foresees two complementary behaviors of leaders, which respectively foster exploration and exploitation in individuals and teams. In the former style, the leader should enhance search, risk taking, experimentation, and innovation, whereas in the latter they should focus on refinement, efficiency, implementation, and execution. This overall approach is identified as ambidextrous leadership, meaning that a leader should be equally capable to open and close innovation efforts by their collaborators in order to optimize the overall benefits for the company. This ambidextrous leadership approach has been found to be related to creativity and innovation (Gerlach et al., 2020; Rosing et al., 2011; Rosing & Zacher, 2017)

It possible to go beyond the simple duality between exploration and exploitation by introducing the space-time continuum for management. This requires understanding of the specific nuance for business of the concepts of space S and time T.

Business Space S can be defined as the conceptual domain which is expected to be spanned by organizations, entrepreneurs, human and artificial resources in search for the action of choice in response to a business-oriented task. In this sense, a tight business space corresponds to a mature market, with stable economic trends, and with strong competition by incumbent companies, so that margins are at a minimum. On the other hand, a loose business space corresponds to a very dynamic (perhaps virgin) market, the evolution of which will be determined by small or latent signals in society, and in which the actors are mainly pioneers, with yet scarce competition.

The available business time span T is defined as the period over which the business-oriented action is expected to occur, also dependent on market conditions and competition. Tight time in business means tight schedules for implementation, production, delivery, with a general focus on short-term impact, e.g. quarterly results as requested by the stock markets. There is little or no tolerance for delay, because this might mean losing market shares to competitors, there is always a strong sense of urgency. In contrast, loose business time is characterized by long-term vision, flexible planning, and tolerance for delays.

By crossing business space S and time T, we obtain the space-time continuum for business, still characterized by four quadrants, each one corresponding to qualitatively different market conditions, and therefore each one more prone to a different and specifically optimized management style for leadership and innovation. In particular, two quadrants point to styles that are either devoted to pure exploitation (TS-TT) or pure exploration (LS-LT). In the former case, there might be instances of incremental innovation, whereas in the latter there is potential for radical innovation. The two other quadrants, LS-TT and TS-LT, are hybrid and represent conditions in which both incremental and radical innovation instances can coexist. In particular, given the tightness of time in LS-TT there is a trend towards exploitation, with contemporaneous agile exploration (one that should give results in the short-medium term). On the other hand, in TS-LT a trend can be identified for exploration with extended exploitation, with medium-long term targets.

These different conditions suggest that different leadership or management approaches may be most beneficial. Given that we are now able to identify four different styles for leadership in innovation, we could introduce the notion of *Vitruvian* management styles, in honor of the Vitruvian man by Leonardo da Vinci and his four arms. All of these concepts are still under development and will be the subject of further theoretical and empirical investigation.

The space-time continuum for creative development

As a final example of application, we consider the case of development from childhood to adulthood, in the perspective of any career in which there is an important role for one's creative expression. We start from the assumption that everyone has a latent creative potential, but given the context-embedded characteristics of the creativity phenomenon, the opportunities that one is met with in life, and the corresponding positive or negative experiences, will play a fundamental role in the development (or not) of a creative career. Also in this case, the space-time continuum can be usefully exploited to analyze in detail the life trajectories as determined by opportunities and corresponding experiences.

We start by defining a *creative opportunity* as a context-embedded episode in life that entails the use, development, and exposure of one's (possibly latent) creative potential. The creative opportunity space S is thus defined as the conceptual/action domain which is expected to be spanned by the individual in the course of this experience. In this case, the tightness/looseness of the opportunity space are essentially *perceived* by the individual, and they are determined by both intrinsic (creative identity) and extrinsic (environmental) factors.

In a tight creative opportunity space, a single standard for 'optimal performance' exists, with few variations on the theme. There are strong constraints on creative outcomes that are pre-conditioned based on canonical forms (e.g., a classic ballet audition). There is little or no tolerance for mistakes, that might lead to immediate rejection and creative mortification (Beghetto, 2014). On the contrary, in a loose opportunity space many alternative variations are available for performance, so that creativity can be expressed with weak constraints and little or no pre-conditioning on the outcomes (e.g., an audition for contemporary dance).

The creative opportunity time T is to be intended in the Greek sense of Kairos, i.e., self-perceived time of the experience, and it is defined as the time window over which the creative opportunity remains active and within which creative performance must take place. Tight opportunity time means that there are stringent limits to the perceived time window to take advantage of the opportunity, with self- or others-induced little or no tolerance for delay. In contrast, loose opportunity time corresponds to the case in which there is no pressure, the perceived time for the experience is ample, planning is not at a prime, and delays are tolerated.

The four quadrants of the space-time continuum now can be interpreted in the following way:

- TS-TT: Opportunities with rigid assessment and a rigid perceived time window
- LS-TT: Opportunities with dynamic assessment but a rigid perceived time window
- TS-LT: Opportunities with rigid assessment but a flexible perceived time window
- LS-LT: Opportunities with dynamic assessment and a flexible perceived time window

However, in this case it is also important to add considerations about Chronos time t, which is the actual, objective course of time. As Chronos time t develops, several creative opportunities might be encountered by an individual, characterized by various degrees of tightness-looseness of space S and time T. The interconnection between these creative opportunities in the ST-Continuum forms a *trajectory of creative opportunities*. For example, one could take up novel writing as a hobby, and the first experiences correspond to opportunities in the LS-LT quadrant. However, at some point in time the person decides to participate to a contest, now working against a deadline but without very high expectations, in the LS-TT quadrant. Assuming that the contest goes badly, creative mortification might follow, and the person will feel trapped in a TS-TT quadrant, where future opportunities are too slim. In case the contest goes well, creative flourishing might follow, and the person might decide to make a long-life career out of this talent, entering the TS-LT quadrant and visiting at times the TS-TT quadrant.

There are many aspects in this model that are yet to be explored. First of all, the role of the mentor is certainly a key. Different styles of mentoring might be more or less suited to the various quadrants, so that a mentor might or might not be able to guide a person for opportunities belonging to a specific quadrant. Second, the Zone of Proximal Development (ZPD, Vygotsky, 1980) could be studied as a function of the four quadrants: reaching a ZPD in a tight space might involve mimesis, whereas in a loose space it might involve poiesis. Third, there might be resonance or mismatch between the tightness/looseness that the person perceives in space and/or time with respect to what is perceived by the outside world. A strong mismatch could facilitate episodes of creative mortification. All of these topics are open research items, to be addressed in future work.

Conclusions

In this article, we have addressed the study of the relationship between the intelligence and creativity constructs, through the introduction of equal-level definitions and of the concept of the space-time continuum, which allow to see that the two constructs are overlapping but distinct. Then, we have shown that the space-time continuum can be specialized for specific domains, including education, management, and development. For each of these domains we have specified the meaning of conceptual space and available time, and this allowed insightful domain-specific discussions.

It should be noted that, albeit a theoretical construction, the space-time continuum is a model for reality: the dominant characteristics of the space-time continuum in which an individual actually lives can be internalized to become a thinking style, thus favoring the flourishing of intelligence, of creativity, or of both. This process of internalization is in line with that proposed by Vygotsky (1980), according to whom interpersonal processes experienced in the environment (society, organization, family, school) can gradually become intrapersonal, and then act to develop intelligence and creativity, as well as determine behavior, goal setting, decisions, life plans.

We suggest that the theoretical framework of the space-time continuum can serve scientific research in several domains involving the constructs of intelligence and creativity.

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