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Interdisciplinary, International Exploration to Strengthen Creativity, Giftedness and Leadership

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Abstract: Creativity, giftedness, and leadership are complex, important phenomena, especially in the threatening turbulence of 21st-century conditions; consequently, there is an increasing need to understand how to strengthen them. We can learn much about these phenomena from within the borders of specialized disciplines; however, they are too complex and multifaceted to fit within the walls of disciplinary silos. Interdisciplinary explorations can reveal theories and research findings that expand our knowledge bases about creativity, giftedness, and leadership. This analysis includes the rationale for engaging in interdisciplinary investigations for these purposes. It includes examples of the ways in which interdisciplinary thinking invigorates creativity and cognitive diversity; illuminates the benefits of visual–spatial gifts that strengthen the development of important talents in gifted students who can go on to become creative leaders; and shows how human rights can be strengthened by constraining economic and political corruption. It also describes the benefits of using interdisciplinary navigation through different levels of analysis, each of which includes a number of academic disciplines.

Keywords: cognitive diversity; corruption; creativity; giftedness; human rights; interdisciplinary; leadership; levels of analysis; visual–spatial talent

1. Introduction to the Need for Interdisciplinary Exploration

There are many conceptions of creativity, giftedness, and leadership. They are highly complex phenomena that defy precise definitions. Consequently, this analysis relies on only the following concentrated conceptions: Creativity is behavior that is novel, often surprising, and in some way compelling or high quality [1]. Giftedness is the possession and use of lofty talents and intelligence [2]. Leadership is the ability to inspire and direct groups through a shared vision, connecting people and ideas, and developing shared ownership of objectives [3,4].

Creativity, giftedness, and leadership have always driven human endeavors, and they have become even more important in view of the complex, turbulent 21st-century conditions. Ever-evolving developments in national, regional, and global socioeconomic, scientific, and political trends and issues are making it much less likely that the decisions of citizens, professionals, and policymakers can effectively address the large-scale problems and opportunities that are emerging in today's world. Without elevations of creativity, giftedness, and leadership, these prospects are grim [5,6].

Some examples of the most pressing 21st-century problems include climate change, extreme socioeconomic inequality, resource shortages, and the accelerating erosion of democracy in many developed nations. These have been termed macroproblems because they are international, interdisciplinary, and long term [7]. They are international because they cannot be solved by a single nation, so their solution requires global cooperation. They are interdisciplinary because they spread throughout the conceptual terrain of multiple disciplines, instead of confining themselves within a single domain. They are long term because they took decades or even centuries to emerge; consequently, their solutions likely will require lengthy, sustained endeavors.

Fortunately, the 21st-century also presents humanity with unprecedented macro-opportunities that also will require the elevation of creativity, giftedness, and leadership because they are enormous and highly complex. Macro-opportunities have the potential to help humanity advance socioeconomically and ethically with considerable speed. Examples include the rapid acceleration of global scientific networking and the development of new technologies that can support and invigorate the advance of green energy systems.

Given all of these highly complex global trends and issues, tomorrow's gifted, creative leaders will need to strengthen interdisciplinary thought and action. Considering the nature of macroproblems and macro-opportunities as well as how they spread outward across multiple, domain-specific fields within the conceptual terrain, interdisciplinary work will be absolutely essential if we are to understand the essence of their structure and dynamics [7].

Of course, many of these large-scale trends and issues are double-sided because they have the potential to produce enormous benefits or harm depending on how they are addressed. For example, socioeconomic globalization is a large-scale macro-opportunity/macroproblem hybrid [7]. Globalization is the strengthening international integration of economies and communication systems. In decades past, there was far less international connection making. Nation states were largely self-contained, although they did engage in economic trade, culture sharing, and occasional conflicts beyond their borders. However, advances in technology enabled economic systems to develop long, growing tentacles that tied national economies together in highly intricate ways. The economic flipsides of globalization include the invigoration of economies as well as the exploitation and mistreatment of work forces through the outsourcing of employment to third-world sweat-shops that approximate slave labor conditions. Because of this dual-sided phenomenon, humanity is both advancing quickly into the 21st-century and moving backward into the 19th-century conditions of the early industrial revolution [7]. Obviously, macroproblems and macro-opportunities make it more necessary than ever that humanity develops more effective ethical awareness, creativity, giftedness, and leadership. They also demand more effective blending of these phenomena.

2. Far-Flung Constructs Smacking Together and Creating Productive Mind Sparks

Interdisciplinary investigations can reveal theories, research findings, trends, and issues that shed new light on the phenomena that scholars study in their own domains [8–15] They also can generate a considerable amount of creativity while expanding conceptions of giftedness and development. They can help thinkers produce an extremely wide variety of connections among diverse concepts.

For example, Ambrose [10] carried out a project resulting in descriptions of 89 theories and research findings from 29 academic disciplines and professional fields. The description of each theory or research finding was connected with one of the other 88 constructs to generate a creative spark. In one of these connections, analyses of utopian demonization from history were connected with scholarship from ethical philosophy portraying the differences between universalist and particularist morality. Leaders of a nation aligning with a utopian ideology portray the belief system that drives that nation as the ideal that other nations should follow [16,17] Meanwhile, the insight from ethical philosophy is that those guided by particularist morality can be kind, thoughtful, and generous toward those in their own identity group but are inclined to be dismissive of, or even vicious toward, outsiders. In contrast, those aligning with universalist morality tend to extend their altruism to outsiders [18]. The insight generated by the creative association emerging from the connection between these constructs from different disciplines included the observation that the wisdom and self-fulfillment of particularist leaders of nations promoting their ideologies as utopian while demonizing outsiders is stunted and hollow in comparison with universalist leaders. Therefore, political leaders would be well advised to develop a screening system to identify candidates for leadership positions according to the extent to which they leaned toward universalism or particularism in their ethical

actions in prior work. As a result, the leaders of those political systems could do much to remove discrimination, abuse, and even genocide from the operations of their governments while injecting more genuine self-fulfillment into their socioeconomic and political actions. The implications of this interdisciplinary synthesis are important. Gifted education has to engage students in interdisciplinary explorations of 21st-century trends and issues while emphasizing moral–ethical development. Fortunately, some work in the field has been moving in that direction [19,20]

If leaders lack the ethical awareness necessary for positive uses of their creativity and giftedness, with the latter taking the form of practical intelligence [21], they likely will engage in extremely harmful dark creativity, which is the use of creative thoughts and actions for unethical, harmful purposes [22–24]. Dark creativity seems to be prevailing in many developed nations that have talented sociopolitical leaders who aspire to magnify their own power, even to the extent that they become dictators of authoritarian regimes [2,25–28]. These leaders and their creative cronies tend to dominate and exploit the economic systems for selfish purposes, making the citizenry more miserable and desperate than they would be under normal circumstances. In order to dodge responsibility for their creation of enormous harm, the leaders and cronies also engage in finger-pointing at one or more minority populations within their borders to identify them as the villains responsible for the suppressed life circumstances of the majority. As a result, the unethical leaders magnify racism, ethnocentrism, and classism, thereby producing far more tribalism, condescension, exploitation, and violence than exists in more normal societies. In these conditions, vast numbers of citizens shift their morality from being somewhat universalist to far more particularist. Virtually all citizens suffer from the dark creativity produced by unethical, gifted, creative leaders in the nations undergoing these disturbing transitions. If the gifted, creative leaders of tomorrow are to address these serious problems, gifted education must recognize and explore the distinction between universalist and particularist morality.

2.1. Viewing Creativity, Giftedness, and Leadership through Levels of Analysis

Another interdisciplinary construct that can reveal the nature and nuances of creativity, giftedness, and leadership is a framework showing levels of scholarly analysis [8,10,29]. Based on broad interdisciplinary explorations, the framework extends from micro to macro, showing how scholarship in a wide variety of fields fits into differing levels, with different implications for various phenomena. Here is a brief overview of the levels, examples of disciplines they encompass, and examples of what they might reveal about human potential and capacities:

- Broad contextual
  - ○ Disciplines operating at this level: political science, cultural anthropology, economics, ethical philosophy, history, social epidemiology, archaeology, etc.;
  - ○ Insights available at this level: the ways in which creativity, giftedness, and leadership are inspired, suppressed, or distorted by large-scale societal and global phenomena;
- Immediate contextual
  - ○ Disciplines operating at this level: educational research, counseling psychology, etc.;
  - ○ Insights available at this level: how the development of aspirations and talents are influenced by educational leadership, curriculum, and the structure and dynamics of programs, classrooms, school and college departments, as well as employment environments for the gifted;
- Individual
  - ○ Disciplines operating at this level: psychology, educational research, etc.;
  - ○ Insights available at this level: the cognitive, affective, motivational, dispositional, talent development, and achievement dynamics of gifted individuals;
- Organic systems
  - ○ Disciplines operating at this level: neuroscience, cognitive science, etc.;

○ Insights available at this level: the functions and structures of larger brain components and subsystems that clarify the nature of gifted minds;

- Cellular

○ Disciplines operating at this level: neuroscience, cognitive science, etc.,

○ Insights available at this level: the structure and function of neurons and neural networks in the brain, also clarifying the nature of gifted minds;

- Molecular

○ Disciplines operating at this level: molecular biology, chemistry, etc.;

○ Insights available at this level: genetic influences on behavior and achievement as well as the extent to which gifts and talents are inheritable;

When studying creativity, giftedness, or leadership, scholars tend to be locked into one level of analysis because they operate from within a domain-specific silo that itself operates at a specific level. However, they can strengthen their own creativity, and possibly leadership in their fields, by individually or collaboratively navigating through different levels, capturing otherwise hidden aspects of the phenomena they study.

Sapolsky [30], a prominent neuroscientist, is one example of such a navigator. He connected neuroscientific work from the organic systems and cellular levels of analysis with discoveries at the broad contextual level by using insights from disciplines addressing the nature and impact of deprivation and extreme inequality. Some of the contextual-level fields addressing these issues include sociology, social epidemiology, and the branch of economics that dissents from mainstream theory in that field. According to Sapolsky, the severe inequality and deprivation revealed by scholars at the broad contextual level strongly influence the development and operations of various brain components. He shows how the *biological grind* deriving from the chronic, long-term stress generated by social comparisons in highly unequal societies produces inflammation, chromosomal damage, and distorted brain functioning: more specifically, learning and memory weaken due to damage to the hippocampus; prefrontal cortex impairment causes diminishment of executive functioning leading to weaker planning, decision making, and impulse control; distortion of the amygdala magnifies fear and anxiety; damage to the mesolimbic dopamine system suppresses motivation and leads to depression and addiction; the retraction of connections among neurons and suppression of the emergence of new neurons weaken thought capacities; and chronic inflammation, damage to the circulatory system, and metabolic changes produce bodily ailments that further stifle the aspirations, talent development, knowledge acquisition, and other capacities necessary for the emergence of giftedness, creativity, and leadership.

Thanks to Sapolsky's [30] navigation through the levels of analysis we can perceive giftedness, creativity, and leadership capacities in places you would not think to look. For example, a group of scholars at a Canadian university developed the Lost Prizes initiative to seek out gifted, creative individuals whose lofty abilities are hidden and never developed, or developed in distorted ways, due to their positioning at the bottom of the economic ladder [31,32]. Often, their miserable life circumstances push these individuals into endeavors that lead to crime and incarceration and leave them with minuscule life prospects. The leaders of the Lost Prizes projects identify the lost individuals, meet with them, counsel them in an ongoing basis, and work with the legal system to accelerate their releases from incarceration, to the extent possible. The counseling involves helping them perceive the big picture about their circumstances, which includes the ways in which their deprivation hid or distorted many of their talents and aspirations. Once they develop this awareness, the Lost Prizes team points them toward more promising life paths.

The initiative has helped many escape from devastating life journeys to launch into impressive new careers. For example, a young, formerly incarcerated individual is now a physician. In another example, a huge, muscular, formerly incarcerated street gang leader, who was in prison for drug crimes and violence, is now a very talented artist whose work inspires many in the region, including deprived young people. He also goes out onto the

streets where he was a former gang leader and interacts with current gangs to help their members avoid his prior fate and seek out ways to discover their gifts, talents, and creative capacities, so they can lead more promising lives. In essence, this impressive example of hidden giftedness has been repairing the considerable psychological damage he suffered during his deprivation while also transforming his impressive leadership talents from guiding the unethical work of street gangs to ethically inspiring and mentoring hundreds of young people who desperately need it.

2.2. Generating and Benefiting from Cognitive Diversity

Page [33,34], an economist and complexity theorist, showed how teams in a wide variety of organizations benefit considerably when they include cognitively diverse participants. Cognitive diversity emerges when a problem-solving team includes diverse theories, backgrounds, belief systems, and problem-solving heuristics. A cognitively diverse team will consistently outperform a homogenous team in complex problem-solving processes even when the latter team is comprised of more intelligent participants. One way to think of this is to contemplate the outcomes of two teams: a homogenous team composed of eminent economists and a cognitively diverse team composed of somewhat accomplished but not eminent professionals from diverse cultural backgrounds and professions. The lack of cognitive diversity would confine the minds of the highly intelligent economists within a theoretical silo, preventing them from perceiving or generating creative problem solutions or innovations outside their dominant idea frameworks. The frequent collision and occasional syntheses of diverse perspectives within the cognitively diverse team will give them new insights and opportunities for innovation that are invisible to the homogenous team.

When individuals or groups carry out interdisciplinary explorations, as in the previously mentioned investigation of 87 theories and research findings from 29 disciplines, they are forcing themselves to become more cognitively diverse. If an individual is conducting an investigation, that person's mind is becoming more cognitively diverse by grappling with very different concepts from very different disciplines. If a group is conducting an investigation, that team could become cognitively diverse in a dual sense: the team will already be cognitively diverse if it includes the aforementioned markers of diversity, and it will become more cognitively diverse in another sense because it is navigating through very different theories and research findings.

Arguably, when individuals become more cognitively diverse, they become more creative because of the unpredictable connection making between diverse concepts. They become more "gifted," if giftedness is interpreted as at least partially emerging from the acquisition of an extremely broad knowledge base [15]. They can become better leaders because they will not be trapped within a dominant, confining theoretical perspective.

Thinking back to the economics example, neoclassical economics is a unified, insular, firmly policed discipline in contrast with a fragmented, porous, contested discipline such as political science [35]. The former type of discipline is unified around a dominant theory, resistant to importing ideas from other fields, and the field's gatekeepers ensure that articles or books deviating too much from the dominant theory do not become published. In contrast, the latter type of discipline is fragmented and contested because there are multiple, conflicting theories. It is porous because it cannot resist, or openly invites, the importation of ideas from other fields. If leadership requires openness to new ideas, a highly intelligent leader trained within a unified, insular, firmly policed discipline will impose strong cognitive barriers hindering her or his own creative problem solving. This is evident in the development of a highly unequal socioeconomic system that has been driven by dogmatism-saturated neoclassical economic theory. The rational actor model confining mainstream economics justifies extreme selfishness and discourages leaders from thinking about ways that the economy could benefit more than just the economic elite [36–41]. Such economic dogmatism inclines the development of intellectual capacities and talents of the gifted to be used for selfish purposes. This provides even more reason for the field of gifted education to inject itself with more ethical awareness.

2.3. Visual–Spatial Talents Strengthening Gifted, Creative Leadership

Bringing together insights from neuroscience, creativity studies, and the history and philosophy of science enables us to understand and appreciate the strengths of visual–spatial thinking, a talent that is becoming more important as the phenomena that gifted and creative professionals grapple with become more complex in 21st-century conditions. This is especially the case when those phenomena emerge from STEM fields. Those with this talent capitalize on their own visual imaginations to understand and generate complex graphic models that incorporate large amounts of data from multiple sources. This enables them to navigate more effectively through the avalanche of STEM findings and innovations that are being generated by scientific networking and advances in technology [42–52]. In just one example, the eminent physicist Albert Einstein generated his groundbreaking theories of relativity largely through visual imagery [53]. Strong visual thinking helped him become a highly creative, gifted, intellectual leader who transformed the field of physics.

The benefits of visual–spatial thinking in STEM arguably carry over into other fields including the social sciences [54]. Metaphorical thought and communication can generate highly creative, compelling visual images that can be very effective tools for leadership. For example, Dr. Martin Luther King Jr. was obviously a highly gifted, creative leader. His speech from the steps of the Lincoln Memorial in Washington, D.C., served as a primary catalyst for the civil rights movement. In the speech, he employed visual–metaphorical imagery to capture the imaginations of the thousands who were at the event, and the millions more who watched it on television. A few examples of metaphors from the speech that provoked powerful, motivational visual thinking included: "rise from the dark and desolate valley of segregation to the sunlit path of racial justice; quicksands of racial injustice to the solid rock of brotherhood; whirlwinds of revolt will continue to shake the foundations of our nation; let us not seek to satisfy our thirst for freedom by drinking from the cup of bitterness and hatred; justice rolls down like waters and righteousness like a mighty stream; let us not wallow in the valley of despair; hew out of the mountain of despair a stone of hope; transform the jangling discords of our nation into a beautiful symphony of brotherhood; let freedom ring." This speech was comprised of 1550 words and included 45 metaphors, many of which were exceptionally powerful [55].

In view of the inspirational power that visual metaphor can generate, and the importance of visual–spatial thinking in STEM and the social sciences, leaders can become far more creative by artfully generating and carefully selecting metaphors that will engage their followers and other constituencies, helping them understand the nature of macroproblems and macro-opportunities while motivating them to address these powerful phenomena. For example, ethical leaders who want to prevent human civilization from collapse in the next few decades can portray climate change as a gigantic firestorm rapidly sweeping over the landscape incinerating the homes and communities of citizens and policymakers. They can portray the disturbing erosion of democracy in many developed nations as evil vampires emerging from their caskets and chasing after the citizens and policymakers to extract their blood. On a more positive note, they can describe the growth of global scientific networking as a gigantic, shining web connecting all communities on the planet, with magnificent innovations sliding down the tentacles of this web into those communities. Overall, if those gifted in visual–spatial thinking recognize their strengths in this capacity, they will have opportunities to become highly creative, effective leaders who can help humanity survive and perhaps thrive in the decades to come.

2.4. Shedding Light on Massive Corruption and the Need to Strengthen Human Rights

For millennia, societies have been plagued by corruption. This problem tends to be magnified in totalitarian systems, but it also infects democracies to a lesser extent [25]. Abraham [56], an evolutionary biologist, pointed out that many societal leaders have engaged in corrupt, even psychopathic, actions that harm the lives of citizens. This was clearly evident in the actions of totalitarian leaders from the past, such as Mussolini, Hitler, Stalin, and Alexander the great; however, it persists into today's world with corporate

leaders often engaging in deceptive, exploitative, even psychopathic, actions. This could be partially due to the fact that corporate leadership is one of the career paths that attracts gifted, talented psychopaths [57–60]. As a consequence of the persistence of psychopathic corruption in the 21st-century, some corporations have become extremely powerful, and their actions often cause damage to millions or even billions around the globe [41,61,62]. In just one example of these effects, the United States Supreme Court opened the door to massive political corruption with the Citizens United decision that portrayed corporations as people and enabled them to purchase politicians with greater ease, thereby undermining democracy and exacerbating already severe inequality [63,64].

A particularly revelatory depiction of the widespread nature of corruption emerged in analyses carried out by Ariely and Garcia-Rada [65]. They showed how more than two-thirds of 180 nations around the world scored less than 50 on a scale ranging from 0 to 100, with the lowest numbers representing vigorous, widespread corruption, and the highest numbers showing that the nation is very clean. The least corrupt nations include Sweden, Finland, Denmark, New Zealand, and Singapore. The United States is well below these nations due to substantial political and economic corruption. A number of Third World nations have scores that indicate extreme corruption. Ariely and Garcia-Rada also described some of the reasons for the persistence and spread of corruption in societies. Receiving a request for a bribe undermines moral character, and bribery becomes contagious. It becomes more acceptable as it spreads throughout a society.

The persistence of nearly psychopathic, or even fully psychopathic behavior in the political and economic leadership in many societies around the world undermines human rights. Weitz [66], a historian, issued a compelling warning about this undermining. He pointed out that the United Nations General Assembly's passage of the Universal Declaration of Human Rights (UDHR) in 1948, constrained the power of unethical leaders in some limited ways but that massive human rights abuses are on the horizon in the decades to come. Severe socioeconomic inequality, the rise of authoritarian populism, the persistence and strengthening of racism, and the devastating effects of climate change are setting the stage for even more unethical leadership with more severe consequences.

These disturbing trends and issues raise implications for creativity, giftedness, and leadership. When intelligent, gifted and talented political and corporate leaders engage in unethical, psychopathic behavior, they produce extremely powerful forms of the aforementioned dark creativity. The severe damage inflicted on the global economy during the 2008 economic collapse is just one example. Gifted, creative, powerful leaders in the financial industry createddeceptive financial instruments that harmed the lives of billions while inflaming the great recession [62,67–69].

Widespread, persistent corruption could be the most important reason for injecting more ethical awareness in into the minds of gifted, creative young people who likely will become tomorrow's leaders. Such injections could enable future ethical leaders to give humanity a fighting chance to constrain corruption and promote the infusion of human rights into political and economic systems.

3. Discussion: Some Practical Responses to 21st-Century Existential Threats and Macro-Opportunities

How can educators of creative, gifted leaders and citizens possibly address the aforementioned 21st-century issues with any effectiveness? They seem so immense and powerful that all of humanity working together might have considerable difficulty dealing with them. However, that does not mean we should not try.

First, all of these gigantic problems and opportunities have ethical dimensions. A substantial lack of ethics in recent decades has exacerbated macroproblems such as climate change, widespread corruption, and the erosion of democracy. Consequently, all young people, especially the gifted, need to learn about the structure and dynamics of global macroproblems and macro-opportunities. This will require them to learn how to navigate through interdisciplinary explorations. Fortunately, curriculum integration processes in gifted education are designed to expand and invigorate interdisciplinary thinking [70,71].

In addition, interdisciplinary projects can generate new creative and critical thinking strategies based on insights derived from concepts that emerge from diverse disciplines. For example, various new strategies are designed to prompt participants to expand their ethical awareness [55]. One of these strategies encourages perception of the extent to which leaders in current events, historical events, or literary works are or were driven by the aforementioned particularist or universalist morality. Another strategy requires participants to place various actions on a diagram that reveals the extent to which morality and legality overlap. Another strategy engages participants in analyzing issues to determine whether or not they are macroproblems or macro-opportunities. Yet another strategy requires participants to clarify their position on a complex, controversial issue and then carry out research with the intention of undermining their own position. Additional strategies magnify wisdom and personal responsibility when dealing with 21st-century issues. Using these new strategies clarifies the nature of ethical creativity and dark creativity while strongly promoting the use of the former. Their use also can enable teachers and mentors of the gifted to focus more on discovering and developing aspirations and talents that align with the emergence of ethical awareness and wisdom, instead of self-centered inclinations, as clarified by Sternberg [20,21,24,72].

4. Concluding Thoughts

Metaphorically speaking, if we think about academic work as exploring and settling on a large island, explorers travel on different domain-specific ships and land in different coves. They build their settlements with the findings from their theorizing and research. Those who are creative use the conceptual building blocks to design novel theoretical and methodological buildings and roads. Those who are gifted use their intelligence and talents to ensure that the new colonies are carefully and efficiently designed to serve the needs of the settlers. Those with leadership capacities pull together the aspirations of the settlers to ensure that their work is guided by a common vision.

All of this sounds promising; however, if the minds of the settlers are too domain-specific, they will assume that there is nothing beyond their own settlement. If, instead, a few of them engage in interdisciplinary exploration, they will make expeditions into the interior, over the hills, and into other domain-specific settlements where they will learn new ways to carry out their work. When they bring those ideas back home, they can help the settlers escape the dogmatism of the "urban planning" they locked themselves into by using only the ideas that have dominated the settlement. The pressing trends and issues of the 21st-century demand energetic, efficient strengthening of ethical creativity, giftedness, and leadership. Interdisciplinary investigations will give us new opportunities to achieve that strengthening.

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