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BECOMING TRANSDISCIPLINARY: THE EMERGENCE OF THE TRANSDISCIPLINARY INDIVIDUAL

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This article develops the idea of becoming a transdisciplinary individual, and begins by tracing the origins and contemporary currents of transdisciplinarity (from 1972 to present day). Using Nicolescu’s earlier concept of a transdisciplinary attitude as an intellectual springboard, this article explores the traits of individuals involved in transdisciplinary projects. Emergent from the literature are four overarching dimensions of understanding what is entailed in becoming and being a transdisciplinary individual: (a) an appreciation of an array of skills, characteristics, and personality traits aligned with a transdisciplinary attitude; (b) acceptance of the idea that transdisciplinary individuals are intellectual risk takers and institutional transgressors; (c) insights into the nuances of transdisciplinary practice and attendant virtues; (d) a respect for the role of creative inquiry, cultural diversity, and cultural relativism. More research is needed on the subjective and embodied experiences of transdisciplinary participants; that is, how they become transdisciplinary individuals.

KEYWORDS: History of transdisciplinarity, transdisciplinary attitude, transdisciplinary individuals, transdisciplinary skills and practices.

INTRODUCTION

Transdisciplinarity presupposes an individual ethics, a desire to improve society and to contribute to the advancement of the common good. This article focuses on transdisciplinary individuals and their subjective experiences during transdisciplinary work. After tracing the origins of transdisciplinarity as an approach to creating new knowledge and/or problem solving, this article presents an overview of current thinking about what constitutes a transdisciplinary individual. The discussion moves from earlier notions of the transdisciplinary attitude (de Freitas, Morin, and Nicolescu 1994) to present day considerations of individual transdisciplinary skills, characteristics, and traits, as well as transdisciplinary virtues and practices.

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Transdisciplinarity was first defined during the First International Conference on Interdisciplinarity that took place in Paris in 1970 as “a common system of axioms for a set of disciplines” (Klein 2004, 515). Psychologist Jean Piaget, mathematician André Lichnerowicz, and astrophysicist Erich Jantsch offered their respective visions and definitions as applied to education (Apostel 1972). Piaget (1972) and Lichnerowicz (1972) focused on general structures and systems. Lichnerowicz (1972) highlighted the role of the mathematic as an interlanguage, while Piaget (1972) was interested in the hierarchical structure of epistemological relationships. Jantsch (1972) described a multidimensional innovative approach to education that was coordinated as a multi-level and multi-goal system. Of the three definitions, Jantsch’s became the most influential, with much of the subsequent scholarship on transdisciplinarity either revising his definition, expanding it, or offering alternatives along with descriptions and theories to distinguish it from other types of cross-disciplinary education, research, and practices. Another early influential definition worth noting from a social sciences perspective can be attributed to Raymond Miller, who, in 1982, viewed transdisciplinarity in terms of conceptual frameworks and “overarching thought models,” such as Marxism, that transcend disciplinary worldviews and boundaries (Miller 1982, 11). To this day, transdisciplinarity remains “a rather elusive concept” that continues to evolve (Jahn, Bergman, and Keil 2012, 1; see also Balsiger 2004; Klein 2004).

Two Main Schools of Transdisciplinary Thought

Scholars have noted that two divergent paths within transdisciplinarity’s evolution became prominent by the end of the twentieth century (Klein 2004). The first is primarily associated with physicist Basarab Nicolescu, but also with philosopher Edgar Morin (2008). In 1987, Nicolescu co-founded the International Center for Transdisciplinary Research (CIRET) in Paris. At the First World Congress of Transdisciplinarity held in Portugal in 1994, Nicolescu and Morin were members of the editorial committee that drafted a Charter of Transdisciplinarity (de Freitas et al. 1994). In 1996, Nicolescu further developed his ideas with his Manifesto of Transdisciplinarity (Nicolescu 2002). Drawing from quantum physics, Nicolescu described transdisciplinarity as multidimensional and supported by the following three pillars (axioms): (a) knowledge as complexity (epistemology); (b) multiple levels of reality mediated by the Hidden Third (ontology); (c) the Logic of the Included Middle, which is in contrast to the binary, exclusive logic of disciplinary knowledge (Nicolescu 2008).

Nicolescu has promoted a theoretical vision of transdisciplinarity that is not limited to scientific research and that strives toward a unity of knowledge that is beyond the disciplines, which he claims to be a new methodology for creating knowledge. He queried, “Why does transdisciplinarity have to be reduced to ‘hard science’? To me, the Subject/Object interaction seems to be at the very core of transdisciplinarity, and not the Object alone” (2008, 12, emphasis added). He continued, “different levels of Reality [TD Object] are accessible to human
knowledge thanks to the existence of different levels of perception [TD Subject]” through the attendant zone of nonresistance (Nicolescu 2008, 9). He asserted that “[k]nowledge is neither exterior or exterior; it is simultaneously exterior and interior. The studies of the universe and the studies of the human being sustain one another” (Nicolescu 2008, 9). His approach to transdisciplinarity thereby presupposes an ethic of shared knowledge that strives for “a stared understanding based on an absolute respect for the collective and individual Otherness united by our common one and the same earth” (de Freitas et al. 1994, 151).

The second widely recognized current (frequently referred to as either the Swiss, Zurich, or German school) focuses on transdisciplinarity as a research approach to addressing complex societal problems such as those related to sustainability. It emerged as a response to societal needs in an age of post-normal science (Funtowicz and Ravetz 1993) and to a new type of research referred to by Gibbons et al. (1994) as “Mode 2,” which is characterized by complexity, hybridity, non-linearity, reflexivity, social accountability, mutual learning, heterogeneity, and, of course, transdisciplinarity (Hirsh Hadorn et al. 2008a, 25; Klein 2013, 196). As such, transdisciplinarity is conceptualized as problem-focused with an emphasis on joint problem solving at the science, technology, and society interface that goes beyond the confines of academia. The intent is not to create new knowledge per se, but to engage jointly in Mode 2 research from a post-normal science perspective. Klein (2013) credited Christian Pohl for tracing back expressions of this current to the early 1990s.

A tangential, yet noteworthy, precursor can be pinpointed to a colloquium on transdisciplinarity held at L’Abbaye de Royaumont, Ansières sur Oise, France, May 25–29, 1998, the proceedings of which were published as Transdisciplinarity: Recreating Integrated Knowledge (Somerville and Rapport 2000). The colloquists at Royaumont endeavored to advance the discourse of transdisciplinarity even though most of them acknowledged they were self-identified “unconscious” transdisciplinarians (Klein 2000, 3). They were “at the same time, both ‘talking about’ how to do transdisciplinarity and ‘doing’ transdisciplinarity” (Somerville and Rapport 2000, xiv). The wide range of perspectives shared at the meeting reflected the “broad spectrum” of the participants’ professional backgrounds and experiences (Somerville and Rapport 2000, xiv).

Nearly two years later, the International Transdisciplinary Conference was held February 27–March 1, 2000 in Zurich, Switzerland. Its focus was on sustainability research, and the clarity of its agenda helps explain why it is widely acknowledged as this current’s official point of origin. Several Swiss federal sciences organizations were among its primary organizers, as were a few international industries. Transdisciplinarity was presented as not replacing traditional forms of research, but as “an additional and mainly demand-driving form of research that involves partners from outside academia” (Häberli et al. 2001, 8). Its proceedings were published in 2001 as Transdisciplinarity: Joint Problem Solving among Science, Technology, and Society, edited by Julie Thompson Klein, Walter Grossenbacher-Mansuy, Rudolf Häberli, Alain Bill, Roland W. Scholz, and Myrtha Welti.

The first decade of the twenty-first century witnessed additional major milestones. Also in 2000, the Swiss Academic Society for Environment Research and
Ecology (SAGUF) launched the Network for Transdisciplinary Research (td-net), which was taken over by the Swiss Academy of Sciences (SCNAT) in 2003 with the support of three additional Swiss Academies. In 2003, the advisory board of td-net decided to initiate a project that would be published in 2008 as The Handbook of Transdisciplinary Research (Hirsch Hadorn et al. 2008b). According to its editors, its purpose was “to enable learning from exemplary experiences in research and to provide a more systematic account of some cross-cutting issues” such as management and education (Hoffmann-Riem et al. 2008, 3). In 2004, the journal Futures devoted a special issue on transdisciplinarity. During the 2000s, empirical research independent of both currents flourished globally, particularly in environmental studies and in health sciences. In 2010, The Oxford Handbook of Interdisciplinarity was published, its last section addressing “Knowledge Trans-disciplined” (Frodeman, Klein, and Mitcham 2010).

During the first decade of the twenty-first century, scholars and researchers expanded burgeoning interests in transdisciplinarity to include the pragmatics and processes of joint problem solving. In other words, how is transdisciplinary research conceptualized, organized, and achieved? How is transdisciplinary collaboration accomplished when participants from different disciplines and societal sectors are working from different assumptions, levels of expertise, types of knowledge, methodologies, and perspectives? Collaboration was quickly included as a “distinguishing feature of transdisciplinarity” (Wickson, Carew, and Russell 2006, 1051), along with what Kim (1998), of UNESCO, coined as transectorality, since transdisciplinary collaborations require the participation of all stakeholders and practitioners, including but not exclusive to the academic researchers, industry, non-profits, government, and the public. As Häberli et al. (2001) pointed out, “ideally, everyone who has something to say about a particular problem and is willing to participate can play a role” (7).

With hindsight, the research on transdisciplinary collaboration in the early 2000s can be reframed as not only about how transdisciplinarity is achieved, but additionally about those participating in transdisciplinary work. This interest in better understanding transdisciplinary participants was not new. The Charter of Transdisciplinarity (de Freitas et al. 1994) identified a number of fundamental characteristics critical for the cultivation of a transdisciplinary attitude and vision among individuals. These included (a) a recognition of the existence of different levels of reality governed by different types of logic, (b) an openness toward myth and religions, (c) an attitude of absolute respect for the collective replete with shared knowledge and understandings, (d) rigor in argument, (e) openness to and acceptance of the unknown, and (f) tolerance of ideas opposed to one’s own.

In subsequent writings, Nicolescu placed importance on the activity of those engaged in transdisciplinarity and the potentialities for transdisciplinary education. For example, in his 1999 address, The Transdisciplinary Evolution of Learning, Nicolescu linked the four pillars of a new kind of education forwarded by a report to UNESCO chaired by Jacques Delors (1996)—learning to know, learning to do, learning to live together with, and learning to be—to personal characteristics important to those engaged with transdisciplinarity. For Nicolescu, individual creativity plays a critical role, as does permanent inquisitiveness, adaptability,
flexibility, and the capacity to build bridges. Nicolescu (1999) appreciated the necessity of being grounded in a discipline or profession, but also of being open to access of another “should it become necessary or desirable” (5). As for the dynamic between self and others, Nicolescu asserted that respect for the norms of a collectivity must be validated by individual interior experiences. This assertion is an important and distinctive point for Nicolescu. Focusing on the subjective experience of transdisciplinarity (and its interface with the transdisciplinary Object), Nicolescu offered a theoretical vision of transdisciplinary selfhood that has integral relational components as the individual is mindful of the collective.

In contrast, the Swiss school’s focus on new forms of scientific, Mode 2, post-normal research has relied to a great extent on traditional approaches such as scientific generalization and objectivity. Consequently, participants have been referred to in general terms as researchers, active agents, practitioners, managers, stakeholders, community partners, or actors (of the life world). What has been of interest is not so much individuals, individual behavior, or personal experience, but group function, process, and dynamics within teams. Within the Swiss school, transdisciplinary teams are heterogeneous due to differences in disciplinary worldviews, orientations, and methodologies among members (Hollaender, Loibl, and Wilts 2008). Thus, heterogeneity—which stems from differences among individuals—is seen as a potential for project failure given the inevitability for conflicts due to these differences. Hollaender, Loibl, and Wilts (2008) pointed out that while heterogeneity is viewed as transdisciplinary’s biggest threat to success, it is also its fundamental characteristic; hence, it is deemed the “transdisciplinary paradox” (386). Barriers to collaboration and participation, due to heterogeneity, consequently necessitate careful project design, coordination, and management (Bruce, Lyall, Tait, and Williams 2004; Hollaender, Loibl, and Wilts 2008). For the Swiss school, transdisciplinary group identity is to be cultivated by team management and needs to be continually managed throughout the project.

For clarification, Nicolescuian transdisciplinarity does not focus on the nuances of transdisciplinary work except for his earlier reference to a transdisciplinary attitude (de Freitas et al. 1994). Rather, his approach concerns itself with notions of what is involved in creating new knowledge more so than the characteristics of individuals involved in this knowledge creation process. However, the latter warrants deeper consideration, as illustrated in the next sections of this article.

Transdisciplinary Individuals and Identities

During the early 2000s, scarce attention was given to understanding the personal identity of the heterogeneous transdisciplinary individual. For the Swiss school, individual transdisciplinary identities continue to be regarded as strictly professional and transient, lasting only as long as a project (Bruce et al. 2004; Hollaender, Loibl, and Wilts 2008; Robinson 2008). One can be motivated to do transdisciplinary research with the promise of extrinsic rewards or anticipate benefits from participating in transdisciplinary projects. Motivation, whether extrinsic or intrinsic, is viewed as critical to success. Primary intrinsic motivation is “a desire to engage with issues in the non-academic world, issues that do not primarily emerge
in disciplinary journals, or in academic discourse alone, but often have to do with fundamental dilemmas or crises in society that do not seem to lend themselves to easy solutions by traditional approaches or methods of analysis” (Robinson 2008, 71).

Nonetheless, certain “ideal qualities” of interdisciplinary/transdisciplinary researchers have been identified, such as curiosity about, and willingness to learn from, other disciplines; flexibility; adaptability; openness in mind; creativity; good communication and listening skills; capacity to absorb information; and teamwork (Bruce et al. 2004, 464). Godemann (2008) identified additional skills for academic researchers related to knowledge integration such as the ability of look beyond one’s own disciplinary boundaries, the capacity for disciplined self-reflexivity, the ability to reflect on knowledge integration processes, and the ability to take on new ideas.

During the first decade of the twenty-first century, the literature within the Swiss school largely refrained from investigating specific subjective experiences of those participating in transdisciplinary projects, although there have been notable exceptions. Horlick-Jones and Sime (2004) suggested that ethnographically-based action research, what they called “border work,” could “embody the active ways in which people make sense of their worlds; and to resist instrumental conceptions of human agents in terms of quasi-mechanical metaphors” (442). Bruce et al. (2004) conducted qualitative research to learn more about the experiences of researchers and research managers involved in the European Fifth Framework Programme that took place 1998–2002. Their research was limited to surveying and interviewing team managers. They succeeded in determining some of the researcher’s motivations for developing interdisciplinary projects with examples of perceived benefits. They reported that “there was a common view among survey respondents that personality and attitudes are at least as important as discipline base and specialization for the successful conduct (and especially co-ordination) of interdisciplinary research” (Bruce et al. 2004, 465).

Taking a slightly different approach, Pohl (2005) investigated the experiences and opinions of researchers regarding collaboration in transdisciplinary research projects. After conducting qualitative interviews, he discovered that those interviewed did not view their individual research contributions within transdisciplinary projects as collaborative. Among Pohl’s conclusions is that “researchers need several years of collaboration to become acquainted with and develop respect for the other ‘culture’ before they will be able to develop joint concepts” that are critical for transdisciplinary work (2005, 1175).

Pohl’s (2005) seemingly paradoxical findings called for more research about those who do transdisciplinary research, and Pohl himself took up that challenge. In 2008, Pohl and Hirsh Hadorn asserted the usefulness of participatory social science methods of qualitative research, ethno-methodology and action research “to access and explore the knowledge of researchers and actors in the life-word” (114). They recognized the importance of learning more about the diversity of perspectives of participants “and to explore and clarify their differences” so that dialogue and collaborative integration within a group or team can take place (Pohl and Hirsh Hadorn 2008, 114). Nevertheless, the overall interest is to facilitate
common group learning, collaboration, and problem solving. The aim is to learn more about each other’s positions about the problem, not necessarily to learn more about who the team members are as individuals.

Other scholars have taken up Pohl’s challenge as well. Jacobs and Nienaber (2011), who work in South Africa, have attempted to “take the transdisciplinary discourse beyond ‘the team’ model to examine the role of the individual and the internalization of transdisciplinarity as a mindset beyond collective models” (666). More specifically, they asked: “How does one identify, train or become a transdisciplinary person?” (672). To state it differently, how does one become transdisciplinary? Does one learn to become transdisciplinary, and if so, how? What are an individual’s motivations interests, and intentions to engage in transdisciplinarity? What skills are required? What are the coping strategies that sustain the completion of transdisciplinary projects when (rather than if, given inevitable conflicts) they go awry? What is a transdisciplinary identity, and how does one negotiate it? To what extent does education play a role in the development of transdisciplinary individuals? Are there any other factors, such as personal background or culture, that should be considered?

The rest of this article highlights many additional contributions about transdisciplinary individuals and their subjective experiences that have emerged (Figure 1) since the pioneering writing on the subject by de Freitas et al. (1994). By no means should it be considered a comprehensive literature review. Rather, it offers some tentative initial findings with the suggestion that further research on transdisciplinary individuals can contribute to the evolution of transdisciplinarity’s discourse.

**TRANSDISCIPLINARY SKILLS AND TRAITS**

Jacobs and Nienaber (2011) admitted that “part of the challenge of adopting a transdisciplinary perspective and way of operating is that it is difficult to know how to start” (670). For the organizers of the aforementioned Royaumont colloquium, the starting point was to be found with the participants themselves. The colloquists at Royaumont were asked to share anecdotes of their experiences, including successes and failures. Klein noted:

In their texts and in their remarks, members of the colloquium also repeatedly declared that transdisciplinarity requires a number of personal qualities. Robert McMurtry emphasized four tenets of success: mutuality, interest, necessity and trust. Trust, in particular, became a term of common reference in the discussion. In distinguishing “earned trust” from “blind trust,” Somerville reiterated the “interactive” character of transdisciplinary work and, echoing Masini, the importance of a “willingness to surrender individual interest for the demands of any transdisciplinary project. (2000, 8)

More than a decade later, Jacobs and Nienaber (2011) argued that the importance of individuals and politics to the success or failure of effective water
Transdisciplinary Skills and Traits:
- mutuality, necessity and trust
- ability to build networks within realm of unfamiliarity
- capacity to engage in meaningful dialogue, suspending one’s point of view
- a societal conscience and awareness
- able to think in complex, interlinked manner
- able to relate to logic of complexity
- have a modest positionality

Intellectual Risk Takers and Institutional Trangressors:
- intellectual risk taker
- adopt a humble attitude towards the immensity of knowledge
- engage in new modes of thinking and of taking action
- inwardly felt need for other’s points of view
- appreciate importance of readiness, resources, relationships
- appreciate importance of intellectual freedom, a collaborative spirit and networking that enables relationships
- confident in professional and self-identity
- able and willing to share responsibilities, knowledge and autonomy
- able to transgress disciplinary borders and reach across disciplines for a particular purpose
- issue-driven
- co-producer of hybrid knowledge

Transdisciplinary Practices and Virtues:
- respect the practice of intersubjectivity
- able to see community of perspectives (not collection of people)
- authentic embeddedness
- courage to abandon one’s home discipline
- cultivation of the art of abandonment
- ability to acknowledge the pain inherent in abandoning one’s intellectual comfort zone
- ability to acknowledge dependence

Creative Inquiry and Cultural Relativism:
- inquiry-based
- trans-paradigmatic
- integration of inquirer into inquiry process
- creative inquiry and complex thinking
- cultural relativism and cultural diversity
- goes beyond limitations of traditional disciplinary approaches and established ways of thinking
- avoids sophomoric and narcistic traps

Figure 1. Factors contributing to transdisciplinary individuals.

governance in Southern Africa is under-researched despite being critically important. They made a persuasive case that the study of those who do transdisciplinary projects is vital to insuring the project’s success, as individuals persuade, frame policy debates, and advocate best practices. They also pointed out that leaders need to be trained. They identified certain “crucial” skills and traits for transdisciplinary, a number of which they borrowed from Giri (2002). These traits include the ability to build networks within the realm of what they term the “unfamiliar” (672) and the capacity to engage in meaningful dialogue that suspends one’s point
of view. They agreed with Giri that one needs to be *embedded* enough within a discipline to know that one’s discipline is in itself diverse and heterogeneous. Finally, one needs to have a “powerful societal conscience and awareness,” be able to think in a complex interlinked manner, be able to relate to the logic of complexity, and needs to have a “modest positionality,” which they describe as the capacity of admitting that “it is impossible to ever perfectly solve or understand an issue completely. The pursuit of knowledge is always imperfect. Similarly there is never a perfect solution to a problem” (Jacobs and Nienaber 2011, 674).

**INTELLECTUAL RISK TAKERS AND INSTITUTIONAL TRANGRESSORS**

Modest positionality within a group does not necessarily translate to docility (compliance or submissiveness). Jacobs and Nienaber’s (2011) work, to a great extent, also echoed the findings of previous studies besides Giri’s (2002). For example, in their review of the literature, Wall and Shankar (2008) reported that transdisciplinarians need to be willing to (a) adopt a humble attitude toward the immensity of knowledge, (b) engage in new modes of thinking and taking action, and (c) “overcome the feeling of threat by means of an inwardly felt need for the other point of view” (552).

Transdisciplinary collaboration involves mutual trust, personal chemistry, and a feeling of safety. Those working in transdisciplinary groups have support expectations for group success but also act professionally. Wall and Shankar’s (2008) findings emphasized the importance of readiness, resources, relationships, intellectual freedom, a collaborative spirit, and networking that enables mentorship. Among the characteristics shared by transdisciplinarians that they observed are “intellectual risk takers, confident enough in their own roles and professional identities to respect each other as equals, and share responsibilities, knowledge and autonomy with others” (552).

Years earlier, Gibbons and Nowotny (2001) pointed to behavior among transdisciplinarians that goes beyond risk taking. In their view, transdisciplinarity is a transgressive approach to knowledge and particularly to knowledge institutions, particularly the university, since transdisciplinarity challenges the university modus operandi of disciplinarity. In other words, those who engage in transdisciplinarity, particularly junior researchers who reap little career awards for participating in transdisciplinary projects, are more than intellectual risk takers. They transgress academic convention and, in so doing, can put their careers at risk if they are not sufficiently grounded or established in their own research programs (Robinson 2008).

Robinson (2008) proposed that people focus attention on the actual practice of, what he called, “issue-driven interdisciplinarity” (72). Akin to the Swiss/German approach, he acknowledged that “such a problem-based focus is a defining characteristic of transdisciplinarity,” “rather than primarily on its theoretical or epistemological claims” (72). Based on his observations and experiences over several decades, he singled out some characteristics of transdisciplinary individuals. He noted they tend to find themselves in the “uncomfortable borderlands between
the academy and the larger world. . . . They tend to start from real world issues and move from there into the arena of scholarly knowledge.” Moreover, “their interest lies more in reaching across disciplines for a particular purpose” (72). They are co-producers of new hybrid forms of knowledge, are issue-driven, and prefer practice rather than theoretical or epistemological claims.

**TRANSDISCIPLINARY PRACTICE AND VIRTUES**

Giri (2002) took a philosophical approach toward a theory of individual and creative transdisciplinary practice. Giri regarded transdisciplinarity as the individual practice of interperspectivity, as defined by Indian philosopher Sunder Rajan. Giri explained that, “[f]or Sunder Rajan, ‘each perspective or point of view is such only as a member of a community of points of view; this is a community and not a collection, for each perspective, from within its own resources, refers to the possibility of others’” (105). For Giri, “this [interperspectivity] calls for looking at disciplines in relational terms rather than in isolationist or oppositional terms,” although she admitted that “the relational approach to disciplines has to face the primary task that in many a case this relationship has to be created” (106). In other words, “transdisciplinarity is a field of relationship” (Giri 2002, 107). Its practice is enriched through the cultivation of certain virtues, including some already mentioned, such as dialogue and the art of authentic embeddedness. Giri listed additional virtues such as the courage to abandon one’s home discipline, the cultivation of the art of abandonment, the ability to acknowledge the pain that accompanies doing transdisciplinary work, and the art of acknowledged dependence (i.e., understanding that transdisciplinary individuals need to leave their egos at the door).

For Giri (2002), it takes courage to abandon one’s comfort zone and areas of expertise. It is also difficult to collaborate and not want to be “the alpha” expert in a group. It requires people to recognize and acknowledge that there are other, often competing, perspectives on an issue or problem, and with that acknowledgement, there will be a certain level of pain that will only increase along with any increases of conflict.

**CREATIVE INQUIRY AND CULTURAL RELATIVISM**

Giri (2002) envisioned a practice of transdisciplinarity that is creative. Given the plethora of challenges and barriers to transdisciplinarity, it is not all that surprising that successful transdisciplinary individuals are noted for their creativity. The concept of creativity itself transcends disciplinary boundaries. Alfonso Montuori, a social psychologist who specializes on creativity, has written extensively on how his personal interests and experiences led to his study of creativity as well as the development of his complementary theories of creative inquiry and transdisciplinarity. In offering “an over-arching framework for applied transdisciplinarity,” Montuori (2012b, n. p.) drew from the writings of Nicolescu and Morin. The originality of his contributions stems from both his focus on subject matter and methodological approach. By focusing on his own personal biography, Montuori explored
possibilities for the individual transdisciplinary researcher through a reliance on autoethnography (connecting personal experiences with wider contexts) and personal narrative as the basis for advancing his framework. Montuori’s (2012b) framework for transdisciplinarity comprises five aspects: (a) inquiry-based rather than discipline-driven; (b) trans-paradigmatic rather than intra-paradigmatic; (c) complex thinking rather than reductive-disjunctive thinking; (d) integration of the inquirer rather than “objective” elimination of inquirer; and (e) creative inquiry rather than reproductive inquiry.

“Central to Transdisciplinarity,” Montuori wrote, “is the integration of the inquirer in the process of inquiry, and that for many of us our passion for transdisciplinarity emerges out of a felt need to go beyond some of the limitations of more traditional disciplinary academic approaches, and certain established ways of thinking” (2012a, n. p.). Elsewhere, Montuori (2008) spoke of the joy of inquiry. Thus, his approach to transdisciplinarity goes beyond intrinsic motivation but is propelled by an individual’s passion and emotion. Moreover, in offering his personal lived experiences of muttness, polyglotism, hybridity, and cosmopolitanism as examples (Montuori 2012a, 2013), Montuori brought cultural diversity and relativism into the discourse of transdisciplinarity, bringing into the foreground what has been only abstractly addressed by the Swiss school as individual heterogeneity or diversity of perceptions (Pohl and Hirsh Hadorn 2008). Montuori described in detail the hybrid nature of his national, cultural, and professional identities, of not fitting into pre-existing categories. Even the type of music he and his band members played as professional musicians defied labels. Clearly, his view of transdisciplinarity aligns closely with his personal experiences:

Again, although this discussion takes me into deeply philosophical fields, it emerges out of questions in my own life, and has found applications and articulations in my own teaching. What I am looking for in the process of my inquiry is always returning to its applications and implications for my life, and more broadly, for how we, as human beings, make sense of the world, how we live our lives together. Unless it’s grounded in experience, and the possibility of making a difference in my life and that of others, it has little interest to me. (Montuori 2013, 225)

Although inquiry for Montuori is rooted in personal experience, its intention is not solipsistic, evidenced in his explicit warning against “the sickly quagmire of narcissism” (2008, 14). Creative inquiry is a means to explore the world, as well as ourselves—not just ourselves. His approach has proven to serve transdisciplinary pedagogical interests, as Montuori founded a unique and successful transdisciplinary doctoral program in the United States, the Transformative Studies Program at the California Institute of Integral Studies in San Francisco.

In summary, understanding the transdisciplinary attitude and what is entailed in becoming and being a transdisciplinary individual involves (a) an appreciation of an array of skills and personality traits aligned with a transdisciplinary attitude; (b) acceptance of the idea that transdisciplinary individuals are intellectual risk takers and institutional transgressors; (c) insights into the nuances of transdisciplinary
practice and attendant virtues; and (d) a respect for the role of creative inquiry, cultural diversity and cultural relativism for the transdisciplinary attitude.

**CONCLUSION AND SUGGESTIONS FOR FURTHER RESEARCH**

The discourse of transdisciplinarity has expanded and shifted since its origins in the early 1970s. Its vicissitudes have reflected the theoretical and pragmatic interests of those studying it and practicing it as well as changes in society over time. General axioms and theoretical approaches proposed initially by scientists and theoreticians were met with more grounded work by practitioners and researchers from the life sciences, social sciences and the humanities. As a result, the discourse of transdisciplinarity in the twenty-first century has opened up to consider more intersubjective, participatory, and subjective approaches, from qualitative, ethnographic, and action research to personal anecdotes, reflection, narrative studies, and in the case of Montuori (2008, 2012a, 2013), autoethnography and personal history.

This article has illustrated that de Freitas et al.’s (1994) earlier consideration of the *transdisciplinary attitude* has paved the way for considerations of transdisciplinary skills, characteristics, and traits, as well as individual transdisciplinary virtues and practices (Figure 1). As Klein (2008) pointed out, “transdisciplinary competencies must be cultivated” (407). Yet, personal experiences and culture are increasingly viewed as just as important as one’s educational background for success in doing transdisciplinary work, as are intellectual risk taking, a sense of transgressiveness, and creativity.

Ultimately, this article proposes new directions in the research on transdisciplinarity. A review of the professional literature indicates that more research on the subjective and embodied experiences of participants is needed. Arguably, not all positionalities and intersectionalities have yet been adequately considered in the literature. Issues pertaining to each individual’s nationality, citizenship, race, gender, class, sexuality, ethnicity, religion, physical abilities, culture, and more need to be investigated to determine their influence and impact on transdisciplinary work. Just as there cannot be one definitive definition or methodology of transdisciplinarity, due to its complexity, hybridity, and heterogeneity, neither can those who participate as transdisciplinary individuals be generalized or stereotyped as a certain “type” or monolithic whole, despite any dream for unity. To borrow loosely from de Beauvoir’s celebrated assertion in *The Second Sex* (1949), one is not born a transdisciplinarian. One learns from one’s culture and experiences, as well as by the cultivation of certain attitudes and competencies, how to *become transdisciplinary*. The more personal experiences of transdisciplinarity are studied, the more people can learn about transdisciplinarity and how it is done; that is, how one becomes a transdisciplinary individual.

**REFERENCES**


