

Spherical thought: Over, above, beyond things flat!

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Abstract: *Spherical thinking* comprises the notion that academic objectives, as well as human interests in general, lie on a curved plane as points equidistant from a center. Spherical thought crosses standard disciplinary boundaries as well as geographical or demographic ones, thereby comprising transdisciplinary dynamic, continuous interactivity. In the twenty-first century, such thought is commonly carried out, often enhanced, with the Internet. Exemplarily, European Union educators have proposed programs promoting Internet-enriched spherical thinking. And an EU-style curriculum has been effectively emulated in electronically delivered French language and culture courses at Coastline Community College, in California, USA, exploiting a simple four-phase template of praxis applicable internationally: Leap inside, jump outside, discuss dynamically, and conceive and achieve actionable results. Besides honing their language skills, Coastline's intermediate-advanced learners of French online have come to understand how to examine in a spherical, transdisciplinary fashion certain questions formerly classed within defined cultural, professional, or academic domains and how to profit from such examination techniques to become responsible global citizens.

Background and purpose

Educational institutions worldwide have embraced the Internet for its speedy, low-cost, unbiased near ubiquity. Indeed, with more than 90 per cent of young adults ages 18-24 reporting home access to broadband (Zou, 2011), and with the new notion that online-accessed open-source educational resources are available to increasingly many people for decreasing sums of money, more than 65% of American higher educational institutions have welcomed the Internet for course delivery (Zou, 2011) and 76% of students are regular users of electronic social networks (Miller, et al., 2012). Even though the Internet's increasing presence in education might make one think that its practical omnipresence represents what Friedman (2005) has called a tri-partite "convergence" necessarily resulting in a movement toward a highly mechanized "flat" global playing field of macroeconomics, however, its utility has often proven mixed. From hardware limitations to software incompatibilities, passing through access problems, connectivity, and source reliability, access to the information superhighway has not always been and still is not completely super. Moreover, as European Union (EU) educators and scientists have demonstrated, Internet utility demands "global citizenship" awareness, as well as

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access and interactivity. The purpose of the present paper is to suggest that educators will develop a new, more profoundly world-aware global citizenry most effectively by applying a simple, four-part process to a broad array of topics that may be examined online from a broad set of perspectives for *spherical thought*. To this end, three considerations are addressed: What is spherical thinking? What is the four-part process of spherical thought? How should, can, and does spherical thought get incorporated into varying educational programs across disciplines, to what effect? An exemplary program in French language and culture delivered online via southern California's Coastline Community College Distance Learning Department illustrates the utility of achieving transdisciplinary, spherical thought through application of the EU four-point praxis for global citizenship.

Spherical thinking: What it is

Responding to what they see as the suddenly faddish, "simplistic", "reductionist", and "Americanocentric" macroeconomics popularized by such writers as Friedman (2005) in *The World Is Flat: A Brief History of the Twenty-first Century*, European Union educators and philosophers have proposed a re-examination of things macro with attention paid more to culture, to worldview, indeed, to global citizenship (Mailhos, 2009). Rather than attempting to conceive and then incorporate into curricula what they see as two-dimensional superficial theories to characterize twenty-first-century societies and their modes of thought, EU theorists have suggested what might be seen as a multi-dimensional *spherical*, transdisciplinary, perspective for academe. That is, EU scholars hold, we must accept that all human interests and goals lie on a curved plane as points equidistant from a common center. The notion of the *sphere* represents a metaphor from solid geometry, as opposed to a planar image of the kind devised by partisans of the flat-world perspective. Especially in a twenty-first century world where images and illustrations seem increasingly to be used not just to enhance but to replace the written word (Mishra, et al., 2011) and where academic programs in science, technology, engineering, and mathematics—STEM—are favored almost to the exclusion of all others, using a term from geometry to refer to something mental or conceptual therefore proves useful. *Spherical thought* crosses standard disciplinary boundaries as well as geographical or demographic ones while it resonates continually with humans' various underlying ethics and culturally colored beliefs. *Spherical thought* is not only seen but experienced as a transdisciplinary dynamic, continuous, iterative, and interactive process. Indeed, as Mishra, et al. (2011) have noted, this metaphor from solid geometry can better encompass the sociocultural side of modern progress than does the two-dimensional flat-world concept. New, overarching, inclusive transdisciplinary habits of mind are called for to serve as cognitive tools for addressing problems in not only science, engineering, and mathematics, but in the arts and the humanities, the theoretical, the conceptual, and the practical.

Tempus European Union researchers have proposed a "Teaching Europe" postsecondary educational curriculum that engages multi-conceptual, transdisciplinary perspectives in a global, spherical way. The *Tempus cursus* can be transferred to the sort of open, flexible, multi-faceted, and multimedia-enhanced curricula defining twenty-first century education

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around the world, crossing traditional academic disciplinary boundaries. Hence: Spherical transdisciplinarity. The goal is that each person achieve the most complete edification he can in a domain of his choosing, with a realization that his achievement has merit and that it is integrated into others' understanding. Aiming for universal education, the notion is that governments, businesses, and academic institutions join to establish an intellectual, socioeconomically responsible foundation of support for a new non-politicized cross-cultural, cross-temporal, cross-disciplinary awareness. And then, all of these entities must collaborate to conceive what *Tempus* has called "actionable results."

Spherical thought: A four-part process to achieve

European Union educators have pointed out that, while geographical, physical distances may seem to be dissolving and communication speed increasing, economic support for education is withering across the globe. Instead of withdrawing from the financial challenge, however, EU educators invite collaboration in the interest of sharing resources for collective intellectual progress. As Mailhos (2009) has summarized, the new curriculum that is generated from all this should be concept-based rather than simply fact-based, comprising a stimulating, dynamic template adhering to four general imperatives: Leap inside, jump outside, discuss dynamically, and conceive/achieve actionable results.

- *Leap inside*: Spherical thinking demands continuous communication among people holding positions at various levels of an organization. As the Association of European Schools and Planning (AESOP) has proposed, "the collaborative rationale" would have low-level employees and executives, employers, students, administrators, staff, and faculty all *leap in* to plan, execute, and refine programs through shared decision-making in a safe, non-hierarchical, non-threatening space, either online or in person. In this way, diverse sub-cultures of an overall corporate culture will be able to voice their particular points of view alongside one another, preferably synchronously, attaining not only self-respect but respect for one another's alternative manners of thinking. The *leap inside* step of spherical thinking requires that all participants, all affected parties, cast into a kind of "thought pot" a summary of their background, training, expertise, special interests, and favorite problems of the day. Each participant is encouraged to offer his statements without judgment or ridicule in a reassuring way. Indeed, as Bokonjic, et al. (2012) point out, *leaping inside* is a necessary precursor to the effective "problem-based" or "case-based" learning that defines much twenty-first century education: "For effective acquisition of knowledge, learners need to be stimulated (from the outside, from others) to restructure information they already know...by discussing in a group setting." Too, *leap inside* sessions can benefit from "Mind-Mapping"-style graphic assistants, non-linear presentations of each participant's background, experience, and *bêtes noires* (pet peeves) to be shared with others. Stimulus peeves can be used to jump-start the activity, such as what to do about limited energy resources, the need for or the importance of learning management systems, the value of school arts programs, how reading/literacy might be redefined in an era of electronic communication, the

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strain of financial constraints on curriculum, the need for sporting programs at an academic institution, etc. *Leaping inside* entails a continuous open sharing process; insight is expected to germinate, things analyzed and synthesized with continuing dynamism. Notably for students of language and culture in particular, participants can be invited to ask questions of one another during this phase, using linguistic pragmatics and negotiation skills, even as they evaluate one another's "viable understanding" (Bokonjic, 2012).

- *Jump outside*: Next in the four-part spherical thought process, problem areas or questions set forth during the *leap inside* stage are to be clarified, honed for discussion; diverse arguments are entertained for how best to delimit each quandary, how to give perspective upon it. During this *jump outside* phase, discussants have to define their terms for one another in the interest of conceiving the *lingua franca* to be exploited later during the discussion stage. That is, for instance, "shop talk" and "buzz words" that serve as verbal shorthand among members of a group have to give way in the *jump outside* activity to democratic dialogue. Hence, as Mailhos (2009) has pointed out, what some participants consider to be accepted definitions or understandings may have to be altered. Indeed, areas of expertise may demand context, as Mailhos (2009) notes. In the EU system, the *jump outside* step comprises the best practices of integrative thinking done in a transdisciplinary manner; participants use backgrounds in engineering or the arts, physics, chemistry, medicine, or accounting, to inform their interpretation. Brainstorming is encouraged from the outset, with the goal of developing dynamic, transformative continuity: Problems are therefore defined, role-playing performed for increased perspective, and alternative problem-solving strategies deployed. Given that a primary goal of *jumping outside* entails the attainment of perspective, the EU *Tempus* suggests the exploitation of exemplary "Case-Based" or "Problem-Based Learning" (PBL) templates of the kind implemented at Maastricht University, where knowledge is "reconstructed...clarifying terms, defining a problem, brainstorming, structuring, defining objectives, searching for (further) information, and synthesizing" (Bokonjic, 2012). EU educators point out that PBL has been demonstrated to be particularly useful among multilingual, multicultural groups with varying expectations or academic backgrounds. *Jumping inside* is supposed to incite "reflexive participation", with consensus arising mostly with regard to the subject matter for the dynamic discussion in phase three of spherical thought.
- *Discuss dynamically*: One of the bases of spherical thinking is dynamism, continuous interactivity. For instance, as Mailhos (2009) asserts, twenty-first century learners must accept that electronic "social networking" and "social media" are not external to their studies or their lives but are instead integrated into them. Dynamic online discussion among individuals of all backgrounds will lead to what Mailhos calls an "enlightened and rational citizenry, an inclusive society." Such discussion should, Mailhos holds, entail transdisciplinary talk, with participants attending to argumentation techniques such as question formulation, vocabulary selection, politeness, exactitude, implication, and

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presupposition, as well as to their own and others' formulaic utterances, fallacy, and question avoidance. As Mailhos (2009) reminds us, deliberation must precede discussion, and discussion underlies the development of civil society that should make conversation groups inside or outside the classroom into respectful microcosms of the outside world. Indeed, the *dynamic discussion* phase of spherical thought development calls for all affected parties to participate iteratively; debate, role-play, and devil's advocacy comprise three techniques suggested by EU educators for inculcating alternative worldviews in the interest of seeing, addressing, and solving problems with reference to more than one perspective and with the goal of across-the-board "buy-in." The *Tempus* program has demonstrated that those whose education comprises a continuously resonating process will find themselves more likely "to participate in civil society, in the political domain, and in the practice of (the social solidarity that comprises) global citizenship" (Mailhos, 2009:06).

- *Conceive and achieve actionable results*: The final imperative comprising the four-point plan for spherical thought calls for arguments to be laid out and distilled into a simple, actionable plan for the solution of problems set forth in the previous three stages. In schools, plans of study will merge into course curricula, designed with at least "minimal procedural consensus" (Davidson, 1996), even though disciplinary fragmentation may seem in the twenty-first century to be more common than is integration. Learning in context, across disciplinary cultures (transdisciplinarity), and by means of spherical thought must be introduced at the start and revisited with every outcome. Beard (2007) has pointed out in research on how people learn that a new, coordinated theory of affects/effects is in order for higher education that is at once context-sensitive and transdisciplinarily consistent: A common format for lessons from many teachers working in different (disciplines) ought to be exploited, she suggests, so that "understanding of concepts rather than simple learning of factoids" (Beard, 2007) can be transmitted, while curiosity, questioning, and self-expression are encouraged. For their part, EU *Tempus* educators suggest that the Beard-style common format be delivered in "small, digestible information blocks" ultimately comprising no more than 60% of what may have been amassed in the course of applying the first three mandates of spherical thought production. Notably, the EU goals dovetail with what the United Nations Educational, Scientific, and Cultural Organization (Unesco) proposed in 1997 as wholesale curricular reform from elementary through post-secondary schools. Indeed, the major thrust of the reform comprises significant attention paid to the notion of global citizenship, with the view that "education for sustainability (will) contribute to a politically literate society." To this end, Unesco maintains, interactions must be made plain between mathematics, economics, and politics, with nature and ecology interwoven into the arts, cultural values, and the social sciences. Exemplarily, the Australian Broadcasting and the New South Wales Department of Education and Training have fused to create a Global Citizens project that can be replicated and tailored to schools anywhere. The project unites students to examine such sets of topics as: population growth, statistics, and migration; climate, geology,

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geography, mathematics, architecture, and biology; communication, self-expression, psychology, and the arts; human rights, philosophy, ethics, and religion. As Hyun (2011) has commented, “systems knowledge, target knowledge (praxis, poïesis), and transformational knowledge” are all to be addressed during curriculum development. Notably, the Internet serves well to offer alternative perspectives on current events that can comprise useful, attractive curricular elements.

Spherical thought actualized: Five examples of looking at things through transdisciplinary eyes

At Coastline Community College, in Fountain Valley, California, *spherical thinking* has been promoted and realized in French language and culture courses delivered online by exploiting the European Union-suggested four-phase process of integrating diverse *mentalités* (states of mind/mental perspectives) into a transdisciplinary program.

At the beginning of each sixteen-week semester, students enrolled in completely-online courses in French language and culture are introduced to the francophone thinking plan, beginning with the EU *leap inside*, performing an initial self-analysis; that is, learners “test” themselves, submitting to learning styles inventories, quick online-delivered sketches/mind maps (e.g., <http://www.businessballs.com> and <http://www.cndp.fr/crdp-nice/atelier-carte-heuristique-ou-mind-map/>) of their preferred ways of apprehending the new. Students are encouraged to “re-test” themselves at least twice during each 16-week semester they are studying French language and culture, so as to determine if their preferences might change and if their manner of approaching new materials might be undergoing a subtle psychological shift from the typically American direct, visual, and hands-on to the typically French oblique, verbal, and theoretical (Baudry, 2005). Although significant shifts are unlikely, increased openness to alternative ways of doing and interacting can be a mark of spherical, integrative thought.

Following their self-evaluation, these mostly adult, intellectually sophisticated students *leap inside* their Web-based course, where it is immediately apparent that they will have to deploy dynamic interactivity to integrate new information into what they already know, sharing in a non-threatening online space their background/expertise in one area with those whose background is in another. Graphic representations, such as non-linear Mind Maps or *cartes heuristiques*, reveal at once these students’ background, experience, and *bêtes noires* (pet peeves). During the *leap inside* period, students express their points of view as they fall out of the academic perspective that has guided their thought. For example, those with expertise in scientific disciplines tend to apply the Scientific Method to each pet peeve that is set forth; observation, formulation of hypotheses, controlled experimentation/hypothesis testing, interpretation of experimental results, and the sharing of results for external validation have been championed. Quantitative thinking is evident, with numbers and data cited. For their part, by contrast, those who come from the humanistic “linguistic disciplines”, as *Tempus*’s Mailhos (2009) calls them, consider their fellows’ questions with respect to cultural patrimony, as well as with regard to diverse cultures, psyches, demographics. At Coastline, students of French language and culture

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online are presented with areas of linguistic/cultural interest and then asked to *jump outside* for perspective before they examine, analyze, and *discuss dynamically*, ultimately arriving at communal, *actionable* conclusions.

During the 2012 academic year, as has happened each year since 1992, when “French Topics Online” courses were introduced in southern California’s Coast Community College District, a number of questions were offered to students for individual analysis and group study. What follows is a summary of how student work was performed on five archetypal topics in a transdisciplinary, spherical way. The topics are exemplary, in part thanks to students’ backgrounds and in part because of the nature of the subject matter.

Cheese-making typified the development of transdisciplinary, spherical thought, for example. That is, cheese-making represents a literally from-the-ground-up process “involve(ing) practitioners and academics in the real-world, . . . communicating and collaborating across traditional borders, established interests, types of knowledge, and groups of stakeholders”, as Perrin (2012) states. With the aid of freely available Google Books, virtual tours of farms and the habitats of goats, sheep, and cows, as well as such Web-based institutions as the Swiss Academies of Arts and Sciences Network for Transdisciplinary Research (<http://www.transdisciplinarity.ch/d/index.php>), Coastliners were invited to recognize how their own seemingly singular educational and/or professional backgrounds can be co-exploited in the interest of a kind of overarching “uber” understanding. Adult students working as professional pharmacists, biochemists, and chemists explained to fellow students in electronic live chat sessions and via E-mail, as well as in Google Hang-outs how cheese is formed from milk, including the biochemical process by which this takes place and how various creatures, including humans, digest it; a Coastline student who works as a farmer raising goats in upstate New York cited the economic, advertising, and production difficulties of the small, artisanal cheese-maker, as well as the benefits of goat’s milk as opposed to cow’s milk, while a Swiss breeder of Braunvieh cattle reported on how these dairy cows began to be exploited during the 1600’s in Switzerland and have become popular in large farms worldwide. A student who owns a boutique travel agency noted the areas in France where *fromagers*, or cheese-producers, can be visited and tastings enjoyed. A student political activist with French genealogical roots argued that Big Dairy is taking over the cheese-making market and that new American-introduced rules for labeling cheeses are hampering the marketing and export of French cheeses; the Braunvieh breeder echoed the worry that European practices might be giving way to the international pressure of Big Usa. Two attorneys responded to these worries. A geologist and an anthropologist shared findings that cheese-making dates at least to the Neolithic era, making it a “culture and class-defining” feature. And a wine and food connoisseur provided the class with a French government-produced chart of which cheeses best accompany what, as well as the qualities defining each of the 300 types of French cheese currently in production. After first sharing their background in the *leap inside*, then asking questions by *jumping outside*, arguing one another’s points of view in the *dynamic (international) discussion*, students in Coastline’s online French language and culture class were able to *conceive actionable behavioral results* in the form of practical, educated, environmentally-aware

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buying and consumption, while also learning more about cultural patrimony and how it is defined, particularly in a country that prides itself on its cheeses.

Also during the 2012 academic year, and in fact nearly every year since the launch of online-delivered courses at Coastline, the question of *research methodology and requirements* was considered, discussed and addressed from the alternative points of view of students whose backgrounds ranged from the aforementioned anthropology and art to law, economics, physics, and biology, among others. And as was the case in the study of cheese-making, experts from abroad were engaged to think spherically about the question. Notably, a Coastline French language and culture student with a day job as a physicist working at the Organisation Européenne pour la Recherche Nucléaire (CERN) remarked that recent findings about the speed of light and about the sub-atomic Higgs boson typify the sort of scientific research and thinking that can edify everyone. A blogger from Le Monde newspaper in France and a Greek physicist doing specialized work at CalTech promoted discussions on the matter via social media. The scientific researchers all emphasized that before claiming that any research result demonstrates “fact”, for instance, scientists always seek outside confirmation of their findings, replicability. Ultimately, it often happens, what may seem to the average person to be effete academic study can yield practical results, the Coastline student/physicist reminded his fellows. The discovery of the electron late in the nineteenth century and the twentieth-century data-sharing system that became the World Wide Web are obvious examples of this. Students with varying backgrounds were invited during the 2012 academic year to *discuss dynamically* what it means to “think physically” and to consider the *actionable* benefits of such thought.

A third, primordially transdisciplinary multi-conceptual subject for spherical thought development among French language and culture students enrolled during 2012 was *architecture*. As Mailhos (2009) suggests, for instance, buildings/structures represent not only a symbolic representational value (e.g., *Jump outside* questions: Which monuments seem best to represent the idea of Europe, the United States, Japan, Australia, China, Brazil, South Africa, etc.?) but also express artistic value (e.g., *Dynamic discussion* of what comprises line, shape, mass, brilliance, color, positive/negative space), mathematical and engineering awareness (e.g., *Actionable results* must consider measurements, materials, stress, etc.), even ecology (e.g., *Actionable results* must also attend to functionality, environmental harmony, spatial syntax, rhythm and integration). Coastline students were invited to examine architecture from various academic perspectives, to read interviews with such architects as Oscar Niemeyer and I.M. Pei, as well as writings by and about Chalgrin, Eiffel, and Lescot, among others. In addition, and happily enough for curricular enrichment, they were invited to peruse pre-conference materials published by Unesco in advance of its December, 2012, International Colloquium on the Conservation of World Heritage Earthen Architecture. The notions of “building”, “constructing”, and “designing” were discussed, and in the final *conceive/achieve actionable results* phase of their work, students were asked to provide their own sketches of the ideal home, the ideal school, and the ideal workplace, with reasons why and how these “ideals” were so.

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A fourth topic was presented initially as inhabiting only the realm of social sciences but was soon defined transdisciplinarily. That is, *the worldwide economic crisis* was seen to demand both quantitative and qualitative analyses, as has Guelfand (2011) has noted, with the former depending upon measurement, upon numbers, data, exactitude, and the latter upon evaluating and understanding. Looking at graphic representation of the rise and fall of prices for stocks, bond, and commodities will offer certain data, but the *dynamic discussion* of reasons for the rises and falls will reveal fears, expectations, behaviors, and even the weather. At Coastline, the student who works as a stock broker provided a perspective on this matter that was different from that of the real estate broker and the artist, for example. And, predictably, the economics scientist, as the person is called in French, had a longer-term, more analytical view of the world's economic trends than did the students involved in the applied arts and elementary education, who saw the patterns from a funds-available-for-our-programs point of view. The transdisciplinary treatment of economic stress required, as Nicolescu (1996) has proposed, not just a *jump outside* listening to the point of view of another but a *dynamically discussed* awareness of the conceptual gap that separates experts in one field from those in another, so as to bridge that gap *dynamically* and constructively to conceive of something globally *actionable*.

A fifth example of 2012 academic-year work in French language and culture online fell directly out of European Union "Teaching Europe" *global citizenship awareness* curriculum. As Mailhos (2009) has written: "Even scholarly disciplines, areas of interest, may be defined in alternative ways in alternative institutions: a question concerning *geography* in one place may be treated as a subject of *earth sciences* or *ecology* in another"; the very categorization of a question as belonging to one zone of the academy or another will influence the way(s) that it is examined. Too, Mailhos continues, and Coastline students *jumped outside* to read: "Terminology, or translation, may reveal underlying attitudes, as in the varying titles for a book aiming to train teachers in the notion of cultural diversity: *All Kinds of People* (English), *Tous différents!* (French), *Cado uno es especial* (Spanish), *I bambini del mondo* (Italian), and *En ik en ik en ik* (Dutch)." These titles expose each culture's alternative perspective on the subject; it is neither right nor wrong to conceive of us all as different or similar, but proper *dynamic discussion* takes place most productively after the varying expressions of alternative worldviews have been set forth for all. Thus, as Dahlin (2006) concludes, "what each co-participant may say must be understood in terms of both the intentions (not the same as motives) and the implicit beliefs informing the text." Coastline French language and culture students were asked during 2012 to choose at least two topics of their interest, one within their area of expertise/study and another from the news that would augment their global awareness. Students were then advised to jump into each matter in more than one language, either English + French, Vietnamese + French, Spanish + French, etc. *Dynamic discussion* entailed questioning the layout and organization of the material in each language, the apparent and culturally-bred logical progression of ideas, the evidence of objectivity v. subjectivity, and the word and syntactic choices, such as Mailhos suggests. *Actionable results* comprised explications and critiques.

Discussion and recommendations

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Using the metaphor of solid geometry, *spherical thought* entails and incorporates more than two dimensions, more than a surface-level scan, more than anything simply linear. Indeed, as Mailhos (2009) has implied, spherical thinking is *transdisciplinary*, where this last calls for an examination of things at once between, across, and beyond specific disciplinary boundaries. Coastline Community College students of French language and culture online have begun, with the collaboration of their fellows, to learn what Dahlin (2006) calls an application not only of ethos but of ethics to each question posed to them, ultimately arriving at *globalized* points of view such as those laid out in the Global Citizens' Initiative (<http://www.theglobalcitizensinitiative.org>) and in Unesco (<http://www.unesco.org>).

At Coastline Community College, online learners of French language and culture enrolled in courses during 2012 have followed a European Union-style program in *spherical thought* development by applying a simple, four-stage praxis to questions in a broad range of areas, five of which have been cited. At the beginning of a spring and a fall 16-week semester, students were questioned about their academic and working backgrounds and then sounded out for their learning styles preferences. Following these activities, students were invited to examine singly and in groups of two to five participants online certain topics/questions commonly categorized as being in the province of either social science or exact science, the arts, humanities, business, economics, law, food, language, or sports. In each case, disciplinary expertises were demonstrated to be not antagonistic, but complementary. Indeed, *dynamic discussion* of topics initially presented with attendant, often single-discipline-implied modes of communication, interaction, argumentation pragmatics, and discourse served to “(promote) a new, globalized view of man, the nature of the human being, within the plurality of culture and ethnicities” (Mailhos, 2009).

Students of French language and culture enrolled online at Coastline Community College in 2012 tended to participate to varying degrees in their interactive *spherical thought* development exercises, but all of them completed at least 20% of the work required to receive course credit (e.g., a minimum of one of the five projects presented above). From the point of view of language development/improvement, all students learned and began to use francophone-style argumentation techniques of the kinds mentioned in Baudry (2005), as well as the linguistic pragmatics of French-style dynamic discussion online, including turn-taking, rules of politeness, the use of litotes, and recognition of another. And besides honing their language skills, Coastline intermediate-advanced learners of French online came in 2012 to understand both how to examine in a dynamic, spherical, transdisciplinary fashion questions formerly classed within defined domains and how to profit from what they learned to become responsible global citizens of the kind promoted in the EU *Tempus*.

In addition, broader sociolinguistic and psycholinguistic consequences have accrued. For instance, having access to diverse, alternative ways of expressing an idea, to complementary manners of addressing a problem, can open the mind to previously unknown compatibilities. The neural flexibility that results from using more than one

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language can expedite one's problem-solving capability and can even offer him options for work or pleasure that he may not have considered within the framework of a single linguistic worldview.

It should be noted that those students who began early in the semester to *leap inside* and *jump outside* in the EU manner were also, predictably, those who demonstrated the most effective *dynamic discussion* and who were able to lead their fellows in conceiving of *actionable results*. Indeed, from the cognitive point of view, the exploitation of the EU model at Coastline has seemed to circumvent some of the complaints about cognitive analysis of the kind presented by Stanford University's Plato (<http://plato.stanford.edu/entries/cognitive-science/> 5.2). That is, the "dynamical and the social", as well as the emotional, conscious, "embodied", and physical environmental have been integrated into Coastline coursework as part of the transdisciplinary.

Extra-linguistically, and not minimally, all of the Coastline learners acquired in a not entirely serendipitous way the sorts of research skills that it might have taken them years to attain without participating in EU-style transdisciplinary study executed with simple, freely available online and electronically social tools, and they gained an enriched awareness of francophone language and culture while doing so. They have seen through the use of more than one research and reportage language how events, facts, attitudes, and opinions are evaluated, weighted, sent to *la Une* (the front page, the main headlines) in differing linguistic groups. They have seen how argumentation takes place as part of dialogue in French, as well is in other languages; as Baudry (2005), among others, has noted, it is often the manner of argumentation, the rhetorical devices, the logic that lend credibility to a stance more than might words, data, or facts alone.

Conclusion

Clearly, more research is warranted and more practice should be offered to determine just how and to what extent to implement an EU-style curriculum with transdisciplinary, spherical thinking at its core. But as Adame (2011) warns us, "the University faces dizzying change...transformations (are) coming at an increasingly intense speed, with social and political problems ever more acute." Hence, Adame and others hold, it is critical for us to realize that transdisciplinary thinking is all the time more vital. Indeed, as Adame writes, it is urgent for institutions of higher education to move from a one-disciplinary vision to a transdisciplinary one, for "only with this change will the University...be able to offer an integral education in which both professors and students may solve real-world problems effectively and affectively." Pointing out the "abysmal differences" between northern hemisphere and southern hemisphere schools, between rich and poor, Adame also notes that Friedman-style flat-world thinking will not lead to dynamic, over-arching, spherical solutions. Rather, as Unesco and EU educators suggest, such solutions precipitate out of an expanded definition of "community", increased international/intercultural engagement, participation, and enhanced awareness that the "other" is not so different from the "self." Spherical thought notes that such notions are not just human; they are necessary to keeping us globally, intellectually humane.

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