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INTERDISCIPLINARY COMMON GROUND: Techniques and Attentional Processes

by

P. Sven Arvidson
Director, Liberal Studies
Seattle University

Abstract: Common ground in the interdisciplinary research process is the pivot from disciplinary to interdisciplinary perspective. As thinking moves from disciplinary to interdisciplinary, what is the shape or structure of attention, how does intellectual content transform in the attending process? Four common ground techniques – extension, redefinition, transformation, organization – are characterized as modifications of attention using Gestalt theoretical principles and phenomenology. The illustrated attentional transitions support the claim that interdisciplinary common ground is a cognitive achievement.

Keywords: attention, common ground, interdisciplinary, Gurwitsch, Gestalt psychology, phenomenology

Introduction

Theories of common ground have been centered on social communication and linguistics, and developed within philosophy and various sub-disciplines of psychology.¹ In the scholarship on the interdisciplinary research process,

¹ In philosophy, common ground theory is developed using concepts such as presupposition, proposition, shared belief, and truth conditions, especially in the philosophy of language (e.g., Grice, 1975; Stalnaker, 1978, 2002; Simons, 2003, 2007; Abbott, 2008). A related development is in philosophical considerations of mind-reading and folk psychology (Goldman, 2006; Ratcliffe, 2007; Hutto, 2008). In social psychology, common ground is linked to cultural influence, cooperation, and conflict, and is generally distinguished from privileged ground (e.g., Fast, Heath, & Wu, 2009; Kecskes & Zhang, 2009; Kouzakova, Ellemers, Harinck, & Scheepers,

common ground has become pivotal in two ways – with the figurative meaning of being centrally important and with the procedural meaning of forming a pivot. Common ground in the interdisciplinary research process is the pivot from disciplinary to interdisciplinary perspective. Allen Repko (2007) traces the origins of common ground for interdisciplinary research. He builds on insights from philosopher Joseph Kockelmans (1979), fellow interdisciplinarians William Newell (1982, 2001) and Julie Klein (1990), and cognitive scientists Herbert Clark (1996) and Rainer Bromme (2000) to articulate a theory of common ground in interdisciplinary research. In his *Interdisciplinary Research: Process and Theory* (2012; see also 2007), Repko puts into wider context the cognitive science support for creating or finding common ground in interdisciplinary research. He implies that psychology should be able to articulate the processes of creating interdisciplinary common ground. This article assumes that research in the traditional areas of psychology – attention, memory, imagination, perception, learning, emotion, intuition, consciousness – can shed light on the process of creating common ground and on integrative interdisciplinarity in general.² It attempts to advance this task by focusing on attention in interdisciplinary common ground, especially in terms of two descriptive approaches to consciousness, Gestalt psychology and philosophical phenomenology.

Interdisciplinary studies is the integration of insights from two or more disciplines for a broader understanding of a complex problem than can be attained by a single discipline (Klein & Newell, 1996; Repko, 2012). By contrast, multidisciplinary work does not involve integration. Newell (2007a) argues for the need for agreeing on a definition of interdisciplinary studies and traces a definitional history (2007b) from Julie Klein and Newell (1996, pp. 393-394) through a number of subsequent sources. Drawing on these definitions and mapping the development of interdisciplinary studies, Repko articulates a compatible definition for interdisciplinary studies:

Interdisciplinary studies is a process of answering a question, solving a problem, or addressing a topic that is too broad or complex to be dealt with adequately by a single discipline, and

2012; Hanna, Tanenhaus, & Trueswell, 2003). In developmental psychology, it is examined through children's interpretive theory of mind cognitive processes and age-differences (e.g., Ackerman, Szymanski, & Silver, 1990; Moll, Koring, Carpenter, & Tomasello, 2006; Lagatutta, Sayfan, & Blattman, 2010). In cognitive psychology, common ground theory is developed through experiments on memory, perspective adjustment, common ground limits, and neural systems (e.g., Horton & Gerig, 2005; Keysar et al., 2000; Barr, 2008; Gupta, Tranel, & Duff, 2012).

² Writing in 2000, Bromme notes that “[P]sychological studies on the conditions and processes of interdisciplinarity are virtually absent” (p.115). Unfortunately, this observation still seems true.

draws on the disciplines with the goal of integrating their insights to construct a more comprehensive understanding. (2012, p. 16)

Contemporary definitions by leaders in the field stress integration. Multidisciplinarity merely adjoins disciplines without integration. A useful metaphor is provided by Svetlana Nikitina: “In a chord, voices remain different, but they form a different type of music, which is in principle unachievable by a single voice” (2005, p. 406; see Repko, 2012, pp. 269-70).³ Repko writes, “Interdisciplinary integration, then, is the cognitive process of critically evaluating disciplinary insights and creating common ground among them to construct a more comprehensive understanding. The understanding is the product or result of the integrative process” (2012, p. 263). Disciplines are not integrated; insights produced by disciplines are integrated. Interdisciplinary work is based upon disciplinary work, even though the “new thing” produced is not reducible to any one discipline that provided constituent insights. An integrated product could be a new model, a new question or avenue of scientific inquiry, a new metaphor, a new narrative, a new process or product (Repko, 2012, pp. 425-36).

Finding common ground between disciplinary insights is a necessary feature of this research. As Repko notes, “For Newell and for integrationists generally, integration requires creating common ground. Only then is a truly interdisciplinary outcome possible” (2007, p. 7). Repko elaborates in 2012,

Interdisciplinary common ground is one or more concepts or assumptions through which conflicting insights or theories can be largely reconciled and subsequently integrated, thus enabling collaborative communication between disciplines. Common ground is not the same as integration, but is integral to the process of integration. The creation of common ground is a necessary but not sufficient condition for integration. (p. 322)

He discusses a bridge metaphor to suggest the function of interdisciplinary common ground. The near side is the land of conflicting insights from relevant disciplines and the far side is the new territory of the integrated prod-

³ Nissani (1995, p. 125) describes the product of multidisciplinarity as like a fruit bowl in which the fruit is still distinguishable; the product of interdisciplinarity is like a blended “smoothie” in which the fruit is not immediately recognizable and the result is a new product (see Repko, 2012, p. 17). Though blended strawberry does not physically resemble its previous shape it has not disappeared. It is more or less a constituent in the new whole (it is supposed that one can still taste it if attention is modified to single it out). Constituents of wholes will be discussed below. The musical chord metaphor is better at portraying how the constituent, as note in the chord, is still active in the integrated whole.

uct. Common ground is the middle construct or span between disciplinary and interdisciplinary work.

As thinking moves from disciplinary to interdisciplinary, what is the shape or structure of attention, what metaphors apply, where does intellectual content go or how does it transform? The core of this article uses an integration of Gestalt psychological theory and philosophical phenomenology to analyze attentional modifications in four main common ground techniques – extension, redefinition, transformation, and organization.

Gestalt Psychology, Phenomenology, and Attention

Suppose upon entering a large garden, you are focally attending to a gurgling fountain; then your attention is captured by a tulip planting consisting of multiple rows of tulips. The rows of tulips hang together as a figure against the background of the larger garden, which might include the fountain, a hedge, and small trees. Suppose next that you single out one row of tulips in the garden, and subsequently, one tulip flower in particular. There are quite a few attentional modifications (transformations or shifts) in this simplified example, but the structure in attending remains the same throughout – focus-context-margin. Each new attentional focus is presented as a whole, a central gestalt detached from but relevant to its background context.⁴ Neither the fountain, hedge, nor small tree is focal as long as the tulip rows as a whole is, but each may be presented as a relevant contextual item, that is, as part of a unified background for the tulip rows as focus. The feeling that you are standing rather than sitting or hearing the dull roar of traffic nearby may be marginal with respect to the focus (tulip rows) and its context (the larger garden). The point is that no matter the content in attending, the focus-context-margin structure for all that is presented persists. The full expression for this invariant structure of consciousness is provided by an interdisciplinary integration of insights from Gestalt psychology and Husserlian phenomenology.

Gestalt psychology originated in the early 20th century with the work of Max Wertheimer (1921), Kurt Koffka (1935), and Wolfgang Koehler (1940), and continues to be influential in present day psychology. A main insight of Gestalt psychology is that the perceptual whole is primary; secondary are the elements that comprise the whole.⁵ Phenomenology was founded with the publication of Edmund Husserl's *Logical Investigations* in 1900-

⁴ The cognate “gestalt” will be capitalized for the discipline of Gestalt psychology but not otherwise.

⁵ An opposite, reductionist view is that the elements of a whole are primary and perception additively associates the elements to create the whole – the elements are perceived first then combined into a whole and remain unchanged in the whole.

1901. This philosophical movement has flourished globally and broadened in significance beyond Husserl's original work. The important insight of phenomenology in the present context is its conception of the invariant organization of consciousness, first described by Husserl, then articulated more fully by his student Aron Gurwitsch.⁶

Gurwitsch recognized a compatibility between the Gestaltist and phenomenological approaches to consciousness and formulated the three-part invariant structure of consciousness (see Figure 1). In *The Field of Consciousness* (1964), Gurwitsch showed that the total field of consciousness at any moment consists of three dimensions: theme (focus), thematic field (context), and margin. In the example, a single tulip flower may meaningfully emerge as a center of attention (theme) in the context of the garden (thematic field). The part of the presented background not relevant to the theme is the margin (e.g., the dull roar of traffic nearby). Gurwitsch applies Gestalt theoretical principles of organization to the Husserlian conception of an invariant three part organization in consciousness. The theme of the single tulip flower is organized by gestalt-coherence so that it becomes a figure against a background, a gestalt segmented and consolidated from the rest

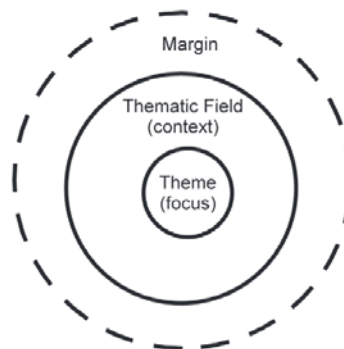


Figure 1. Field of Consciousness

of the field (1964, pp. 275-279). The constituents of this theme or focus are functionally significant for each other (1964, pp. 114-116); e.g., the stamen and petals perceptually support each other—they cohere as constituents in the whole when the tulip flower as a whole is focal. These two Gestalt theoretical principles – gestalt-coherence and functional significance – apply to the theme or focus in attending. Unity by relevancy, a contextual relevance, is the Gestalt theoretical principle by which the thematic field or

⁶ Gestalt psychology is not phenomenology. Gestalt psychology is founded on modern physics. Phenomenology puts the assumptions of natural science and modernity in question as part of its descriptive method. Nonetheless, Gestaltists use descriptive rather than explanatory techniques in their work and this is compatible with phenomenology (see Embree, 2003).

context is organized (1964, pp. 340-342). The context consists of gestalts that are relevant to each other and to the theme.⁷ Adjacent tulips, a fountain, a small tree might be relevant in the contextual background for the focal tulip flower. The margin includes three realms always at least peripherally present in consciousness (Gurwitsch, 1985): the stream of consciousness (temporality), embodied existence (e.g., that one is standing rather than sitting), and the perceptual world (e.g., the peripheral traffic).

In the next sections, we will see that common ground techniques can be articulated as attentional modifications in this tri-partite structure of consciousness.⁸

Extension

The common ground technique of concept extension “addresses differences or oppositions in disciplinary concepts or assumptions by extending the meaning of an idea beyond the domain of the [original] discipline into the domain of another discipline” (Newell, 2007b, p. 258; see Repko, 2012, pp. 340-343).⁹ In an undergraduate paper applying Repko’s broad model of interdisciplinary research, “Delta Smelt Death: An Interdisciplinary Approach toward Rethinking the Management of Endangered Delta Smelt,” Tali Missirlian (2014) found that the ongoing problem of California’s water shortage and the role played by the delta smelt (a small indicator fish) seems intractable.¹⁰ Environmental studies researchers

⁷ “The common ground theory postulates that every act of communication presumes a common cognitive frame of reference between the partners of interaction called the common ground” (Bromme, 2000, p. 119). It seems that “common cognitive frame of reference” can be articulated as relevancy (see Repko, 2012, p. 326). On gestalt phenomenology of social encounters see Gurwitsch, 1979.

⁸ Note that as we move from visual perception to the realm of conception or cognition, the same three part pattern of consciousness holds. A “phenomenon” in phenomenology is any object whatsoever that can be presented, intended or encountered. This includes tulip rows, scientific theorems, literary concepts, the self (in reflection), etc. If that object is focal in attending then it is the theme.

⁹ It seems the extended concept must be redefined in some ways in order to accommodate the stretch from one disciplinary perspective to another. See the discussion of redefinition below.

¹⁰ Unpublished student examples are used throughout with permission, following Newell’s (2006) example. They are final projects from a required course in the B.A. in Liberal Studies at Seattle University called LBST 3300, Methods of Interdisciplinary Research, using Repko (2012) and Liu and Noppe-Brandon (2007) as textbooks. For more examples, see Newell (2006), Repko (2012), and Repko, Newell, and Szostak (2012). Also, we will be focusing on the single interdisciplinarian for added clarity (see Newell, 2007b, p. 247).

seek to conserve ecological diversity (smelt and other species who depend on its presence) and political scientists seek to conserve traditional water practices in farming, business, and households. The terms “conserve” and “conservative” have roles in both disciplines, so redefinition for common ground was possible. Missirlian chose to investigate the etymology instead, which led to the concepts of “preserve” and “a preserve.” She found these concepts important in environmental studies: A preserve is kind of sanctuary for non-human animals. Missirlian extended the environmental studies concept of a preserve to insights from political science, creating common ground. The extension involves viewing political reasoning and government decisions within the shared context of a preserve, to describe the state of California as a preserve for human life (as well as non-human life). What is going on here in terms of attention?

Conflicting disciplinary insights is the first attentional condition illustrated in Figure 2. The interdisciplinary researcher is presented with two conflicting insights on smelt death, each a focus within a distinct disciplinary perspective. A focal insight (theme) on smelt death is presented within the attentional context (thematic field) of political science. For example, a politically motivated (and U.S. District Court-mandated) action of turning off the aqueduct turbines that thrash the fish is meaningful in the context of following the law and justice system, but also striving to conserve human practices of providing irrigation for farming and other business uses of water, home use (watering lawns, having tap water), and so on. A focal insight on smelt death is presented within the attentional context of environmental studies. For example, turning off the turbines will be meaningful in the context of conserving the smelt and other non-human species that rely on it in the delta. Concepts not focal but contextual include bio-diversity and a preserve.

Common ground is the second attentional condition illustrated. The conflicting disciplinary insights – a political scientific insight on smelt death and an environmental studies insight on smelt death – are brought together as two foci within one context. The common ground context of a preserve is the meaningful background from which integration might be achieved. The concept extended from environmental studies to political science creates a common ground “enabling collaborative communication between disciplines” but not yet integration. In terms of attention, the picture is unstable. The relevancy relation between the environmental studies focus and common ground context (of a preserve) informs or is a model for the political science focus and common ground context (of a preserve). The interdisciplinary researcher must elucidate the connection between the political science focus and common ground by appealing to the more

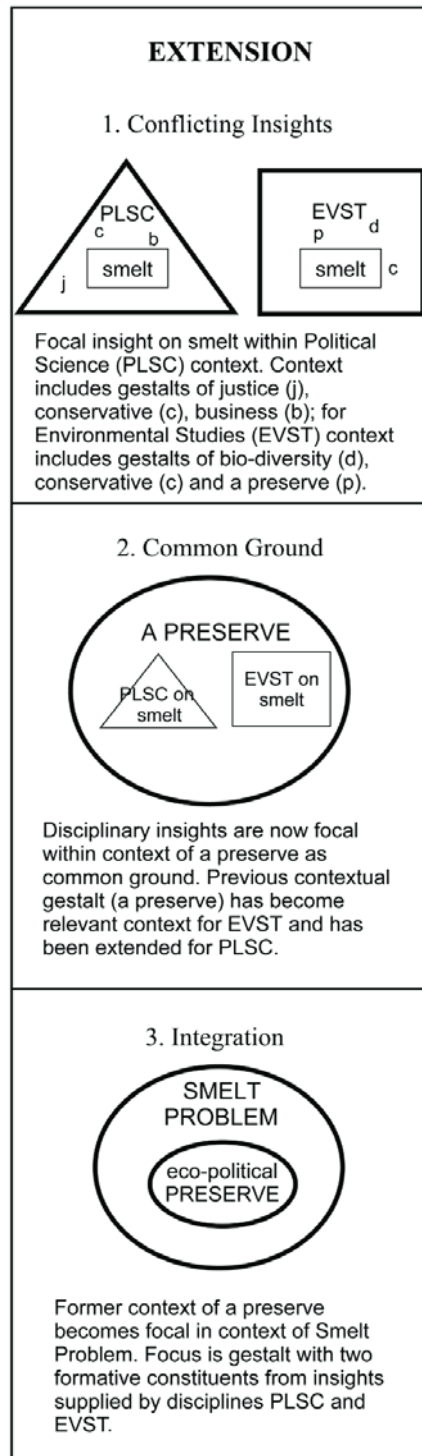


Figure 2. Extension

clearly articulated connection between the environmental studies focus and common ground. In short, it is more difficult to imagine how California is a preserve for humans. The co-presented, environmental studies theme/thematic-field relationship helps show how to develop this imagination.

Integration is the third attentional condition in this simplified example. The new focus in attending is the integrated concept of “an eco-political preserve.” This focus is presented in attending within the context of the delta smelt problem. Three main characteristics mark this kind of modification. First, the previous attentional context (a preserve) has become the focus in attending. Gurwitsch calls this attentional modification “synthesis” (1966, pp. 243-248). It is the kind of attentional change illustrated in the example of attending to the one tulip flower and then the row as a whole, or the row as a whole and then all the tulip rows. Second, as the new theme or focus is presented, a new relevant context is presented as well, namely, the delta smelt problem, with new relations between focus and context. Hence, integration is a “new thing,” a replacement of one focus-context (theme-thematic field) with another. Third, this gestalt-coherence of eco-political preserve has both forming and formed constituents. The two attentional foci (PLSC on smelt and EVST on smelt) become integrated as forming constituents in a functional significance within the new gestalt of eco-political preserve. The forming constituents are featured or more significant, but not focal on their own. A forming constituent can become a theme itself by attentional singling-out. But this attentional change of singling-out would be a kind of return to an earlier moment in the process, for example, back to common ground or conflicting insights. This return could be useful as part of the iterative nature of processes in the broad model of interdisciplinary research. A next attentional modification in this broad model would involve a move toward an integrated product. Missirlian suggests a new process for water distribution or a new educational program. These will involve modifications in attention where the focus of an eco-political preserve is replaced with a new theme (e.g., an educational program).

Redefinition

The common ground technique of redefinition is adjusting a term or concept to find a shared context for conflicting insights (Newell, 2007b; Repko, 2012, pp. 336-340). Either the new concept is already relevant within each disciplinary perspective and it just needs to be adjusted to bring out commonalities between the conflicting insights, or the new concept is not prominent in either disciplinary perspective, but is really a new term being introduced. Redefinition occurs to some extent in many interdisciplinary research projects: “Because most disciplinary concepts and assumptions are

couched in discipline-specific jargon, the integrative technique of redefinition is involved in most efforts to create common ground, in conjunction with other techniques of integration as well as by itself” (Newell, 2007b, p. 258).

Missirlian productively uses the technique of concept extension. However, to discuss redefinition and compare it to extension, we will imagine both choices of technique together to see the difference in terms of attentional modifications.¹¹ Missirlian found the term “conservative” being used differently in environmental studies and political science. In the first it means to maintain a diverse environment; in the second it means to safeguard a traditional policy.

Redefinition would involve adjusting the meaning of “conservative” to create common ground for the conflicting disciplinary insights. Though concept redefinition and concept extension are very much alike in terms of attending, a major difference is the starting point. In concept extension, one discipline is at home with the concept to be extended (a preserve); the concept is a part of its disciplinary perspective (environmental studies) within which the insight on smelt is produced. In concept redefinition, either both disciplines are at home with the concept or neither is. For example, with regard to “conservative” or “being conservative” both environmental studies and political science can count that concept as a part of the context within which the delta smelt problem would be meaningfully interpreted (hence, in Figure 2 in addition to small j, b, p, d, *each* context also has a small c). As in the case of concept extension, a gestalt appearing in the context can become the context in the next attentional modification of common ground.¹²

Common ground and integration in redefinition look the same as in concept extension, but there is a notable difference unrepresented. In common ground achieved by concept extension, the same discipline (environmental studies) that supplies the concept (a preserve), now made contextual for that disciplinary insight, has an original or native relation to this concept in comparison to the other discipline of political science. This other disciplinary insight must be fit into this extension more purposefully. (As said above, it is more difficult to imagine how California is a preserve for humans.) In contrast, in the common ground technique of redefinition, the redefined concept is already presented in both disciplinary perspectives or it is in neither. This means that the tension between the two foci in common ground is different in redefinition, more equally balanced and less likely to be dominated by one disciplinary perspective. Nonetheless, Newell thinks

¹¹ See Newell (2006, p. 95) for an account of Nagy using extension and redefinition.

¹² Alternatively, some third concept not historically included within these two disciplines might be redefined to form common ground; this modification is context replacement (Gurwitsch, 1964, p. 322).

that “it is rare for a disciplinary concept to be redefined to such an extent that its perspective no longer dominates the meaning of the concept” (2012, p. 308). Perhaps, then, concept redefinition can be considered a species of concept extension.¹³

Transformation (Restructuring)

The common ground technique of transformation creates a range or continuum between two opposing concepts or assumptions. Newell writes “Transformation is used where concepts or assumptions are not merely different (e.g., love, fear, selfishness) but opposite (e.g., rational, irrational)” (2007b, p. 259). The goal is to open a breathing space for the seemingly discontinuous positions with regard to the complex problem and the disciplinary insights. As Repko puts it, “Rather than forcing us to accept or reject dichotomous concepts and assumptions, continuous variables allow us to push back assumptions and extend the scope of theory” (2012, p. 343). For example, Megan Rogers (2014) uses transformation to create common ground in her student paper “Understanding the Social and Cultural Constructions that Perpetuate Female Genital Cutting.” The professional perspective of Western medicine, informed by biology and health sciences, holds that female genital cutting is mutilation, not medical surgery. Western sociology does not approve the practice, but provides insights into why it is perpetuated; for example, it is considered necessary as a rite of passage into womanhood, ensures marriageability of the woman, makes the woman fully a member of the community, especially among peers and family, and, to a smaller extent than usually assumed, demonstrates religious adherence. The opposition in the complex problem was personified when first-generation Somali women insisted Seattle’s Harborview Medical Center doctors perform the procedure on their young daughters (Ostrum, 1996).

Attention research in psychology and philosophy has examined this relationship between opposed views in perception (Husserl, 2001; Kanizsa, 1979; Kelso, 1995; Palmer, 1999). It is almost always demonstrated as sudden

¹³ In another student paper titled “Raising the Percentage: Interdisciplinary Study of Retention Focused on Seattle University,” Thomas Bui (2014) investigated the problem of college retention using insights from the disciplines of education and psychology. He redefined the concept of retention found in both disciplines. In psychology, retention is empirically measured memory and in educational administration it is continuing student enrollment. Bui redefined retention as “creating memories” which freed the concept from the venues of laboratory and educational statistics. From this common ground, Bui showed that insights in psychology and education can be integrated to produce new policies or procedures in creating positive memories through campus programming, increasing a sense of belonging and affective attachment to the school.

attentional changes in the contemplation of line drawings from one point of view to a discontinuous, opposed view. The examples in Figure 3 of the



Figure 3. Multistable Line Drawings

Necker cube, vase-faces, and duck-rabbit illustrations are well known. Gurwitsch calls this transformation in attending a restructuration or restructuring. In restructuring, forming and formed constituents switch roles. The forming, dominant constituents of a gestalt cease to characterize the whole, while previously formed, dependent constituents now stand out. In the process, a new gestalt is presented as focal. Gurwitsch writes,

We often say: for a certain appearance, this or that feature is “characteristic,” it is “the chief matter” in it, referring thus to certain privileged constituents in the appearance. Around the “privileged” constituents are grouped others, leaning on the former which, so to speak, form the stem about which the latter thrive. This state of affairs suggests that the privileged constituents be called formative [forming] and that those which surround them be called formed constituents. (1966, p. 190)

In the vase-faces figure, the entire line that outlines the vase is forming for the vase presentation (Gurwitsch, 1966, p. 14). If the top horizontal line or the bottom horizontal line (marking the top and bottom of the vase) disappears or loses its privilege, the vase is not presented. In the alternate faces view these two lines are de-emphasized; they are not forming for the faces. Forming constituents are a “center of gravity” of the gestalt (Gurwitsch, 1966, pp. 190–192). In the faces view, the lines marking the noses and lips are a “center of gravity” while the upper and bottom lines are not.

Although attentional research has almost exclusively discussed the either/or discontinuity of the views of multistable figures, gestalt-phenomenological concepts of forming and formed constituents can help describe the common ground technique of transformation or restructuring as an attentional modification to both/and. Consider the following, more subtle case of attentional restructuring (Gurwitsch, 1966, pp. 241–243; see also Arvidson, 2013).



Figure 3. Less Radical Restructuring

Emphasize the right line of the row in Figure 4, making it forming, while still being part of the row. The row of lines as a whole is still presented as thematic, but now with the right line as a forming constituent. This subtle restructuring is much less radical than the “flipping” of a Necker cube or the switch from vase to faces. Then allow the center line to become a chief constituent in the row as a whole, while the other lines are de-emphasized or dependent upon this emphasized constituent. The row shifts slightly as the middle line changes its functional significance. Many other restructurings are possible, for example, allowing both the center and right line to be forming, but none of these attentional changes needs to single out a line as a detached, consolidated theme or focus. Singling-out or detaching a line is not restructuring. You have gone too far if you have separated out a line, making it figure against the background of the rest of the row. The attentional modification of restructuring is common, and Gurwitsch notes that restructuring is “essentially universal and can involve any constituent” (Gurwitsch, 1966, p. 241). When the tulip garden is presented as a thematic whole, the row of red tulips can yield in emphasis to the adjacent row of yellow tulips without either row becoming a theme or focus in selective attending (thereby replacing the thematic tulip garden with another theme, e.g., the yellow row). The tulip garden as a whole is still presented as focus or theme, but the gestalt is not quite the same from moment to moment, now oriented around the yellow row as a center of gravity.

In interdisciplinary research, the common ground technique of transformation seeks to bridge opposite concepts through creating a range or continuum. The multistability of two opposing views needs to be tempered by the possibility of intermediate positions that include the extremes. This possibility of range between and including the extremes is the common ground. In the student example, Rogers identified conflicting disciplinary insights and their assumptions in the first attentional condition in Figure 5. As noted above, the female genital cutting procedure is considered mutilation in Western medicine. It is almost always accompanied by negative health outcomes for the woman’s body and does not resolve any known physical malady. The assumption here is that the body, its health and well-being, is primary when considering the FGC issue. An associated assumption is the Western and especially American notion of individualism and free

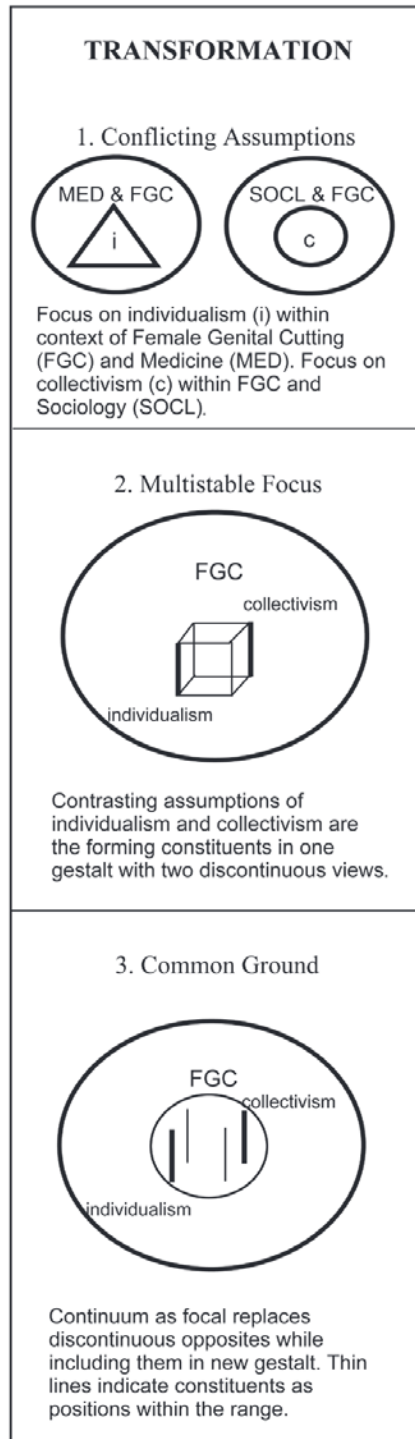


Figure 5. Transformation

choice (e.g., as evidenced in the concept of informed consent). As noted above, sociologists explore FGC as a rite of passage, and describe the role of community, family, peer pressures, and social expectations. The concept of social status or standing as a member in the community is salient. The assumption of this discipline is that culture, its traditions and inner dynamics, is primary when considering the FGC issue. Conflicting disciplinary insights of mutilation and social status reveal opposed assumptions of the importance of individualism and collectivism.

To create common ground using the technique of transformation one must allow the opposed assumptions to become forming constituents of a multistable whole. In this second attentional condition in Figure 5, a Necker cube as multistable focus depicts this tension. With individualism as forming constituent, the forward face of the cube faces southwest and the square that represents collectivism is formed or merely supporting. With collectivism as forming constituent, the forward face of the cube faces northeast and the square that represents individualism is a formed constituent. The views are discontinuous. Common ground is created by opening up a range of possibilities that includes both individualism and collectivism. This promise of a continuum or range becomes the new theme, replacing the previous Necker cube-like theme.

In the third attentional condition in Figure 5, the common ground illustration, the hard lines of opposition have disappeared, making the spontaneous reversibility or multistability less possible.¹⁴ Integration is adding constituents to the range, as positions within the range. These constituents can also be singled out, in another attentive change, to become integrative products. For example, in the Harbor View Medical Center case, a committee recommended a compromise “surgery” that tries to take into account each end of the continuum, concern with individualism and concern with collectivism. In her student paper, Rogers reports “The committee found an alternative in the form of a ‘sunna’ circumcision, which as envisioned, would entail no more than a small cut in the prepuce, the hood above a girl’s clitoris.” Rogers noted that this moderated version of FGC is known to the World Health Organization, is almost identical to male circumcision that is performed regularly in the West, and was acceptable to the Somali women,

¹⁴ Another ordinary example is delay of gratification. To succeed in many tasks throughout the day, we may restructure what attracts our attention as a way to motivate completing a task. A wonderful illustration of this occurred when experimenters tested how children could restructure the focus of attention in order to “cool” the desire for a cookie (Mischel, et al. 1989). When the children made the cookie color forming instead of taste, they created a successful psychological distance. Like the examples just above, it seems a less radical transformation than a vase-faces or Necker cube restructuring.

who without it reported they would “go back to Africa or to another country” to get the procedure. “In the end,” says Rogers, “the compromise scheme was abandoned due to criticism from anti-FGC communities.” Nonetheless, in terms of interdisciplinary research and common ground technique of transformation or restructuring, the “sunna” circumcision shows how an integrated result can emerge once opposites are restructured into a range.

Organization

The common ground technique of organization involves ordering relationships between or among insights or variables (Newell, 2007b, p. 259). It is the most diverse technique since insights can be organized in a variety of ways including tables, flow charts, levels (e.g., macro-micro), hierarchies, clusters, and causal chains.¹⁵ Rick Szostak writes “Organization involves using a map to show how different insights are related. If one author stresses cultural influences on a particular behavior and another stresses personal influences, organization might involve showing how culture influences personal decisions that affect behavior. The map becomes common ground” (2013, p. 58).¹⁶ Organizational common ground is often expressed in a table or diagram. In a student paper, “The Logic of Meat in America: An Interdisciplinary Study on the Domestic Validity of Animal Agriculture,” Harper Tassie (2014) investigates the status and future of the meat industry. She draws on insights from economics, nutrition science, and environmental studies to produce common ground through organization. Tassie found that time and outcome were useful ways to organize the conflicting insights. She constructed a table (Table 1) using descriptors short-term (up to 2050), long-term (after 2050), and risk or benefit. In this kind of organization, the disciplinary insights are arrayed horizontally. If this were the only way to organize each insight, no integration would be possible because common ground would not be established. (This horizontal, merely additive result

¹⁵ One might wonder whether the attentional changes articulated for each technique are relatively invariable for all possible examples. This question cannot be answered here. It is fair to venture that organization would be the least likely to be consistent over examples, since the modes are so diverse. For example, the tabular organization seems dissimilar to causal diagrams, and each is distinct from a micro-macro organization (for how attention works in the latter see Navon, 1977).

¹⁶ “There are cases when different disciplinary authors have developed theories that overlap more than they differ. They focus primarily on how the process identified in one theory sets the stage for the process identified in others, which in turn influence others....In these cases, the map showing these interactions and feedbacks depicts the common ground” (Repko, 2012, p. 361). An intriguing question for interdisciplinarians is what common ground is such that a map can depict it?

is multidisciplinary mapping.) However, Tassie arranged the insights vertically in contexts that apply to each. The question is, how does attention work in this kind of common ground organization?

Reading across the table, the insights are each at home within the context of their disciplinary perspective. For example, in the short-term risk column, which we have taken for an example in Figure 6, harm done small farms is presented within the economics perspective, misleadingly low nutritional value (“poor nutrients”) within the perspective of nutrition science, and land contamination and depletion risk within the perspective of environmental studies. Reading down the table, these insights are on common ground when one attends serially to each within the vertical context framed by the organization of the table. One attends to harm done small farms, then poor nutrients, then land risk, all within the same context of short-term risk.

In the attentional modification of serial-shifting, the theme is replaced by a new theme that is relevant to it (Gurwitsch, 1964, p. 345; 1966, pp. 230–232). The relevant context for the old theme provides the item that will become the new theme. Gurwitsch writes, “Here we progress from one theme to another; however, to a theme which was materially related to the one ‘held in grasp’ before, both belonging to one and the same sphere of objects” (1966, p. 231). Though Gurwitsch does not have in mind the common

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Table 1. Organization in Tassie’s “Logic of Meat”

ground technique of organization, we can see how it applies to this case of mapping through creating a table. In reading down the list of insights in the short-term risk column, one attends to “small farm harm” with “poor nutrients” in the wings awaiting focus. What exactly is the status of “poor nutrients” in relation to “small farm harm”? The former is part of the relevant context of short-term risk within which the latter appears as central (as theme). The context in attending is rarely homogenous; it is made up of wholes (gestalts) that are relevant for the current theme but not focal. For example, the red tulip row does not disappear when the yellow tulip row is singled out, and the next step and previous step of a math problem are still relevant to the current step. As “small farm harm” is thematic, “poor nutrients” is part of the thematic field. “Poor nutrients” is anticipated; it is in the wings as a more or less relevant gestalt, more or less clear, along with others in the context of short-term risk (including “land risk”). As “poor nutrients” becomes focal, “small farm harm” moves to another dimension in attending, namely, as a relevant context item. Although the theme is switched out in the serial-shifting modification, there is no lapse of consciousness. There is always a theme, whether it is thematic content as coming into presence (e.g., in the transition from “small farm harm” to “poor nutrients” as theme) or the content as more fully presented (e.g., “poor nutrients” as a well-formed theme). The new theme was previously a gestalt in the thematic context of the old theme, and the old theme becomes a gestalt in the thematic context of the new theme. In the second attentional condition of common ground, as one scans this column of the table vertically and repeatedly, no matter the starting point (e.g., starting with the environmental studies contribution of “land risk”), the insights may become less attached to their disciplinary origins and more integrated with each other within the given context (short-term risk). Common ground in this type of organization yields to integration by allowing a new arrangement of insights from various disciplines within one context. This new context or organization is not available within one discipline (horizontally in this example).¹⁷

¹⁷ This simple attentional succession or serial-shifting has been taken as the standard accomplishment in the history of research on attention, including both Husserlian phenomenology and present day experimental psychology. Gurwitsch’s work is a remedy to this monolithic view of attention, as can be seen in the other examples of this article.

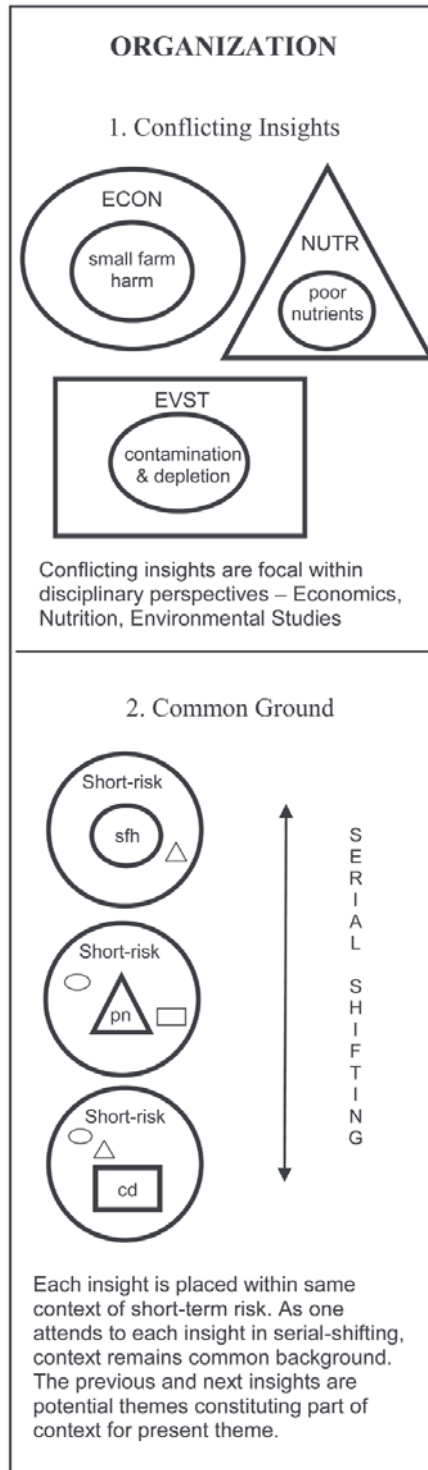


Figure 6. Organization

Concluding Reflections

This article uses psychology and philosophy to articulate interdisciplinary research processes. Four common ground techniques—extension, redefinition, transformation, organization—are characterized as modifications of attention using Gestalt theoretical principles and phenomenology. The attentional transitions illustrated and described in this article support the claim that interdisciplinary common ground is a cognitive achievement. In addition to research on attention, research on memory, emotion, personality, consciousness, perception, intuition, learning, and imagination can shed light on the interdisciplinary research process. All of these have been researched by psychologists and philosophers for many years. Memory is intimately connected with attention and is essential to successful integration of disciplinary insights. This is evident in Tassie’s work (Table 1), in which continued rehearsal of serial-shifting among the insights involves retentions and protentions. Emotion and personality are implied in descriptions of “traits of interdisciplinarians” (Repko, 2012, pp. 58-61; cf. Bromme, 2000, pp. 116-118). Consciousness is a main theme of both the cognitive sciences and philosophy, and can be discussed in the interdisciplinary research process in terms of self-awareness, metacognition, and social consciousness, and in the modifications of attention in common ground (consciousness is the context and margin in attending). Perception is a traditional area of research that aligns with perspective-taking in the interdisciplinary research process (Newell, 2001; Nikitina, 2005; Repko, 2012, pp. 274-276). Intuition or insight has an important role in the achievements of interdisciplinarity (Welch, 2007). Learning has been a primary concern in psychology and interdisciplinary studies since their respective inceptions. New findings in contemporary cognitive sciences (e.g. in decision-making, body-mind relations, empathy, brain functions) can advance work on interdisciplinary teaching and learning that has already been done. Imagination has been a philosophical topic for centuries and has grown in interest for psychologists. Newell (2007b, p. 260) and others highlight that interdisciplinary research involves imagination and playfulness in many of its moments. For example, in Missirlian’s work we see that perceiving how California is a preserve for humans takes imagination.

Prepositions matter. The prepositional phrase “on which” (as in “common ground on which to construct an understanding”) may be misleading for some since it conveys a place to stand or rest. The phrase “from which” conveys better that common ground is a means to an end, a pivot from which the researcher steps from disciplinary to interdisciplinary insights. This is

one of the most relevant features of the bridge metaphor for common ground – a bridge is not really ground at all, but is defined by the places (grounds) it connects. “Between” and “among” must be used carefully. It is correct to say that common ground is “between” conflicting disciplinary insights (Repko, 2012, pp. 56-57; see Repko, Szostak, & Buchberger, 2014, Fig. 6.5, p. 130). It is better to say that common ground is “among” or surrounds the disciplinary insights: “Interdisciplinary integration is the cognitive process of critically evaluating disciplinary insights and creating common ground *among* them to construct a more comprehensive understanding” (Repko, 2012, p. 263; emphasis added). This difference in prepositions may seem small. But the picture of attention, memory, and so on differs with the preposition used. Attentional context in interdisciplinary common ground is three-dimensional for the conflicting disciplinary insights, so common ground is not as much a vector between the insights as a context that surrounds them, as a sphere surrounds objects within it. Try the following. Go back to any of the line drawings depicting focus and context and make it three dimensional in perception by allowing the context part to become a surrounding ball rather than a circle, a sphere rather than a plane (Arvidson, 2006). The researcher lives in these dynamic surroundings, this focus and surrounding context, in executing the interdisciplinary research process.

Contemporary phenomenological philosophy and descriptive psychologies, such as phenomenological psychology (Giorgi, 1970, 2012), may be just as useful as the cognitive sciences in advancing the theory and techniques of interdisciplinary common ground (Arvidson, 2014). Husserlian phenomenology is a method of rigorous reflection on conscious experience, an approach to articulating how things are presented in consciousness. It aligns in many ways with the interdisciplinary research process. Phenomenology is a reflective and iterative process in which the practitioner assumes a special attitude (phenomenological reduction and epoché) that suspends judgment and identifies bias, engages in perspective-taking (imaginative or free variation) to reveal inner and outer horizons in the phenomenon, aims to achieve an essential insight (eidetic intuition), and is philosophically holist rather than reductionist (Husserl, 1982; Idhe, 1977). A researcher interested in pursuing the possible ties between the interdisciplinary research process and phenomenology would have to eschew representationalism (that representations must mediate our perceptions of the world), ubiquitously assumed in the cognitive sciences. Representationalism is contrary to phenomenology whose foundational assumption of “intentionality” is that we are already presented with the world prior to representing it (Husserl, 1960). Gurwitsch is an example of one who was able to balance phenomenology, experimental psychology

(including examination of brain-injured patients), and Gestalt psychology in its descriptive aspect to articulate conscious experience. Though he pre-dates modern interdisciplinary studies, his work is a fertile model to study.

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Biographical Note: P. Sven Arvidson is Director of Liberal Studies and Senior Faculty Fellow in the Center for Faculty Development at Seattle University, where he is also the founding director of the Consortium of Interdisciplinary Scholars. His interdisciplinary research centers on human nature, ethics, and pedagogy. His most recent books include *Teaching Nonmajors: Advice for Liberal Arts Professors* and *The Sphere of Attention: Context and Margin*. He received his M.A. and Ph.D. in philosophy from Georgetown University, and an M.A. in psychology from Duquesne University and B.A. in human development from St. Mary's College of Maryland. He may be contacted at arvidson@seattleu.edu

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