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Facilitating interdisciplinary work: using quality assessment to create common ground

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Abstract Newcomers often underestimate the challenges of interdisciplinary work and, as a rule, do not spend sufficient time to allow them to overcome differences and create common ground, which in turn leads to frustration, unresolved conflicts, and, in the worst case scenario, discontinued work. The key to successful collaboration is to facilitate the creation of a climate that will stimulate awareness of such challenges. Differing perceptions of quality and credibility among disciplines are major obstacles to successful collaboration. Some of these differences are incommensurably rooted in different epistemologies while other differences are more a question of culture. In the present paper, a framework is proposed which is designed to initiate a process necessary for success. First, the framework is designed to stimulate discussions about quality and credibility, and second it is designed to help separate epistemological differences from differences in culture. The framework takes its point of departure in five questions that deliberately include terms, such as 'sufficiently', 'coherently', and 'reliable', which are unproblematic in a group with shared norms but become increasingly ambiguous as diversity increases. Experience suggest that pondering these questions, alone or in a group, stimulates reflection, leads to increased awareness of one's own perspective, and facilitates dialogue, collaboration, and creation of common ground.

Keywords Assessing credibility · Interdisciplinary · Facilitating the research process · Framework for assessment and facilitation · Creating common ground

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Introduction

A deeper understanding of complex issues of significant societal concern requires integration of knowledge from more than one discipline.[1] However, newcomers often underestimate the challenges of interdisciplinary[2] work and, as a rule, do not spend sufficient time to allow them to overcome differences and create common ground, which in turn leads to frustration, unresolved conflicts, and, in the worst case scenario, discontinued work (e.g. Lattuca 2001; O'Donnell and Donnell 2005; Thompson Klein 2005). A key question for successful collaboration is how to facilitate creation of a climate that will stimulate awareness of interdisciplinary challenges and thus enable planning, execution, and assessment of such work (e.g. Thompson Klein 1990; Derry et al. 2005; Heintz et al. 2007).

Differing perceptions of quality and credibility among disciplines are major obstacles to successful collaboration (e.g. Weingart and Stehr 2000; Boix Mansilla and Gardner 2003; Nowotny 2003; Barry et al. 2008). Many differences among disciplines are due to disciplines using language and illustrations (figures, pictures, tables etc) in utterly dissimilar ways (Giltrow 2002a). Different terms are sometimes used to describe the same phenomenon and the same terms are sometimes used to describe different phenomenon. Often differing formats are used, such as headings, where to write what, and how to take care of references. Some of these differences are incommensurably rooted in different epistemologies while others are more a question of culture (Bradbaer 1999). Drawing upon the work of the Gothenburg school, Braedbar (1999) argues that distinguishing the 'how' from the 'what' makes it possible to distinguish epistemological differences from differences in culture. In addition, he convincingly argues that using such an approach makes it possible to develop self-aware learning, a competence in high demand for scholars who engage in interdisciplinary efforts. Assessment of credibility is rooted in implicit academic cultural norms. It is widely acknowledged that it is in the breaches of the taken-for-granted, rather than in the following of expectations, that we come to understand our values, norms, and taboos (e.g. Feldman 1995; Holstein and Gubrium 1998). Good research comes in many forms, and full awareness of the effects of this multiplicity is certainly more likely to develop if scholars strive to uncover and discuss both the explicit and the implicit norms guiding perceptions of good versus bad research.

Hence, when involved in activities that span traditional scholarly borders, you need not only to become familiar with the procedures of your own discipline, but also to acquire consciousness of and respect for variations among research procedures.

In this paper, I take a capacity-building approach and propose an easy-to-use framework to enable creation of common ground. The aim is to develop a framework which is intuitive, is simple and is easy to implement for the newcomer, irrespective of academic background and of whether or not s/he is motivated to address potential communication barriers. The ultimate goal is to facilitate planning, execution, and assessment of interdisciplinary work. The focus is on empirical research and education in areas that deal with complex societal issues such as globalization, poverty, terrorism, and sustainable development.

The framework has its roots in a working document which was developed at The Environmental Science Programme,[3] Linköping University (LiU), Sweden (Öberg 2001)

[1] I use the term 'discipline' to denote a branch of knowledge including the system of social control all branches of knowledge are part of, as further discussed by e.g. Salter and Hearn (1996, pp. 17–18).

[2] I use interdisciplinarity and interdisciplinary work to denote scholarly activities that in one way or another involve the use of knowledge from more than one discipline.

[3] http://www.liu.se/tema/miljo/.

and has been revised as a result of discussions at The Institute for Resources, Environment and Sustainability[4] (IRES) at the University of British Columbia (UBC), Vancouver, Canada.

The Environmental Science Program at LiU, Sweden is a combined interdisciplinary bachelors and master's program, launched in 1998. In chairing the program's early development, I engaged a group of scholars with academic backgrounds in ecology, ethics, law, philosophy, political science, economic history, technology, hydro-chemical modeling, human geography and educational sciences. The group jointly identified key skills required of future environmental professionals, outlined the general program curriculum, and approved individual curricula of courses to be given during the first two years of the program (Abrandt-Dahlgren and Öberg 2000; Öberg and Achen 2000). The assessment of bachelor and master's theses surfaced as an intricate problem. I was the course instructor for master's theses during the first 3 years (1998–2001) and kept notes of the assessments. To minimize the problems, all supervisors participated in a number of seminars. Concrete examples were used as the point of departure for each seminar. The focus of the discussions was the question "What signifies high or low quality in a thesis?" These sometimes-heated discussions made it possible to separate a number of quality-definition differences rooted in epistemology from differences rooted in varying academic cultures. By focusing on differences in culture and seeking to identify common ground, the group was able to identify key quality-assessment areas. Acting as facilitator of the discussions, I revised our discussion notes into a working document which outlined a standard assessment policy and included these key-areas; this document was subsequently used as a guide for the program's assessment work (Öberg 2001).

IRES is an interdisciplinary research institute which is home to a major graduate program with, currently, 80 doctoral and 40 master's students. In October 2006, I assumed the directorship of IRES. Quality assessment soon surfaced as an issue of topical interest among students, supervisors, and committee members, again, to a large extent driven by the fact that the latter two groups often represent rather diverse academic cultures.

Given these challenges in both locations, an early form of the proposed framework has thus been used at the Environmental Science Program at LiU and is, in its present form, being tested at IRES. The framework appears to meet its purpose of raising awareness of, and increasing the ability to, manage potential pitfalls and thereby generate common ground. The process initiated by these questions seems effectively to facilitate planning, execution, and assessment of such projects. It has not, however, been evaluated systematically at this point.

Keys to success

Drawing on empirical studies of interdisciplinary projects, several scholars, such as Lisa Lattuca (2001), Julie Thompson Klein (2005), John Bradbeer (1999) and Veronica Boix Mansilla (2005) argue that successful interdisciplinary research groups invest considerable time in managing differences and creating common ground. Clearly, those able to create a climate that stimulates dialogue[5] within the group have a greater chance of success. Interestingly, studies such as the one by Rossini and Porter (1984) indicate that the greater the disciplinary distance among core team members, the easier it appears to be to initiate such discussions. It seems likely that broad diversity in an interdisciplinary team increases awareness of the need to work toward integration and to learn about disciplines other than

[4] http://www.ires.ubc.ca.

[5] I use the term 'dialogue' inspired by David Bohm (1996).

one's own so as to understand how the varying methods, theories, and perspectives compare, complement, or contradict each other. Paradoxically, it seems as if the challenge is to find ways to stimulate dialogue in interdisciplinary groups with smaller disciplinary distance, as the need for such dialogue appears to be more easily overlooked in such groups.

Quality assessment as a tool for creation of common ground

Most scholars have a clear understanding of the demands of a disciplinarily credible research text, even if these demands are seldom clearly verbalized. The difference between a homogenous and a heterogeneous academic environment is that it is possible to rely on tradition in the former; quality comes with the territory (e.g. Kuhn 1970; Knorr-Certina 1981; Bradbaer 1999; Kogan 2005). In such an environment, the competence required to conduct 'a good study' is mainly acquired through apprenticeship: the student spends time in an environment where teachers, supervisors, and other researchers use the same type of methods, models, concepts, theories, and thought styles[6] which the student is learning to manage and will later use. Texts produced by teachers in the environment are of a similar format to the ones the student reads and eventually will write. By being entrenched in the culture, so to speak, one learns how to demarcate and anchor a study in a credible manner. The literature and the theoretical framework are more or less givens, as are the points of departure used to critically assess the presentation of empirical data. The agreed-upon norms go with the territory, and the learning process is mainly driven by the amount of time spent in the environment rather than by conscious reflection (e.g. Latour 1988).

In contrast, in an interdisciplinary environment, various scholarly cultures meet, and it becomes harder to acquire an ability to distinguish high quality from low quality without conscious reflection, not least since the final product is seldom a given (Bradbaer 1999; Lattuca 2001; Boix Mansilla 2004; Mitrany and Stokols 2005; Thompson Klein 2005).

Irrespective of discipline, empirically-based research traditions generally demand that a study be conducted in accordance with some sort of broadly-standardized structure which involves asking questions such as: What kind of information is going to be collected and how? How is the information going to be analyzed? and What theoretical framework is going to be used? It is clear that there are large variations among disciplines as to what components comprise the research procedure, as well as where in the final text the components should appear and to what extent this needs to be done (e.g. Giltrow 2002a). Some disciplines expect a detailed description of the procedures, whereas others prefer more overarching, sweeping descriptions. Yet others demand detailed accounts for some of the basic procedural components at the undergraduate level but omit this demand during graduate studies or at the post-doctoral level, as a scholar is expected to be familiar with the basic craftsmanship elements when the doctoral thesis has been successfully defended. The procedural rigor of a study is, thereafter, often hinted at rather than made explicit. Such hints are used to give clear signals about mastery to the informed but are impossible to understand, or even detect, for the outsider. In other cases, some of the basic procedural components are boiled down to a cipher-like text, and writers prove their rigor by referring to accepted credible sources. It is thus not surprising that discipline-based scholars experience difficulties in acknowledging the rigor in other disciplines' procedures. As a direct consequence, it is both easy and common for scholars to judge the work of other disciplines as less credible than that of their own. There are many who testify that an increased understanding of how rigor is achieved in

[6] I use the term "thought styles" in line with the ideas presented by Ludwik Fleck (1979).

other cultures than one's own is a major key to successful collaboration across traditional borders (e.g. Lattuca 2001; Boix Mansilla and Gardner 2003; Derry et al. 2005). My personal experience is fully in line with these testimonies.

Academic quality

The framework presented below consists of five questions targeting areas of agreed-upon common ground on academic credibility. The questions deliberately include terms, such as 'sufficiently', 'coherently', and 'reliable', which are unproblematic in a group with shared norms but become increasingly ambiguous as diversity increases. The idea is that pondering these questions, alone or in a group, will stimulate reflection, lead to increased awareness of one's own perspective, and facilitate dialogue, collaboration, and the creation of credible interdisciplinary work.

The point of departure for the framework as a whole is the written text, since students in most disciplines are trained to write papers of various types. A number of explicit and implicit norms lie beneath each and every academic tradition and these norms are, to a considerable extent, mirrored in the text, including expectations about what is to be told, how to tell it, and where the various components should be placed. Acknowledging that the basis for judging a text's credibility varies among scholarly traditions, empowers us to develop a deeper understanding of what traditions other than one's own may bring to the table. Below follows a short description of the reasoning underlying each of the five questions in the framework.

Q1: Is the study area sufficiently and coherently demarcated?

An empirically-based research project must, by definition, be demarcated, as it is impossible to study everything. To demarcate a study is to make a number of more or less conscious choices. One has to decide what to study, according to what method, and in light of what literature. It is considerably easier for a reader to relate to and evaluate a study if the principles underlying central choices are clarified.[7] The process by which a study is demarcated starts long before the text is formulated, often before the researcher starts to consciously design the study (e.g. Knorr-Certina 1981). Among disciplines, expectations vary as to which choices are considered central, where in the text the choices should be accounted for, and how extensive the accounts should be. Choices that are taken for granted in some disciplines, and thus not accounted for, are in other disciplines given a thorough analysis. The fact that choices may not be accounted for in a familiar way often causes researchers to dismiss texts from other research traditions as 'bad research'. It does not take much imagination to realize that the basic and common demand to account for choices easily becomes a stumbling block in interdisciplinary projects.

One reason scholars have difficulties accepting other ways of doing things is that they are often unaware of their own ways (e.g. Knorr-Certina 1981). Even though all disciplines emphasize the need to clarify one's central choices, few disciplines stimulate awareness of how such choices are made in their own disciplines and how these choices differ from those of other disciplines. The process of becoming aware of one's own tradition and becoming familiar with traditions of other disciplines is an efficient way to handle some of the obstacles of interdisciplinary research.

[7] However, it is necessary to keep in mind that good communication does not solve the problem of bad research.

To summarize, all scholarly work must be demarcated, and, in order to do so, the author must decide what to study, from what perspective, what information to gather, and how and where to gather it. A good study clarifies the grounds upon which these choices are based.

The question is designed to inspire reflection and discussion on how to demarcate a study, which choices should be made visible, pros and cons of various ways to clarify the choices, and, not least, how to interpret the terms 'sufficiently' and 'coherently'.

Q2: Is the study sufficiently anchored in relevant literature in terms of the framing, methodology, and analysis?

Academics would commonly agree that a study must be carefully anchored in relevant literature and that the origin of information must be clearly presented in the text in an indisputable manner (e.g. Giltrow 2002b; Gustavii 2003; Craswell 2004; Day and Gastel 2006). The fact that these two demands are commonly expected across disciplines, however, becomes harder to see because of the differences between disciplines regarding what needs to be identified where, to what extent, and in what ways. Within a clearly confined discipline, it is obvious what type of literature is considered basic and relevant, which journals one is expected to keep up-to-date with, and what books everyone is expected to have read. However, one of the major challenges involved in working in areas that cut across traditional academic borders is that no such common literature exists and, as a result, it is a challenge to define what constitutes 'relevant literature'. Consequently, among other things, the demarcation process discussed above involves deciding which literature to draw upon.

The identification of what is relevant literature is, to a major degree, defined by the aim of the study and the way in which one has formulated the research problem. The problem formulation process most often involves an iterative process in which the researcher moves back and forth between the general and the specific, between theory and method, between the abstract and the concrete. By iterating between these levels, it becomes possible to hone the aim and thus make the study feasibly narrow but still interesting from a general perspective. In the process of sharpening the aim, the literature plays an indisputable role. By critically examining the literature in light of the aim of the study, it becomes possible to distinguish between literature which provides general knowledge within a field and literature which may be useful for framing a study.

A common experience shared by most scholars is that students initially find it difficult to distinguish between citations, accounts, plagiarism, and their own conclusions, and they rarely manage to clarify which statements result from their study and which statements originate from someone else's. Supervisors commonly struggle to explain the ways in which the anchoring *must* be clear all the way from the framing of the study, through the choice and use of method, and into the analysis. The question is designed to inspire a discussion of how to interpret the words 'sufficient' and 'relevant', a discussion that ought to be kept alive in all academic environments.

Q3: Has the information been collected in a reliable manner and is it of sufficient quality?

In order to carry out a credible empirically-based study, one has to be sufficiently skilled in collecting relevant information in the form of researchable material.[8] Empirical research

[8] Different disciplines use different terms (such as data, empirical material, information, evidence) to denote what I here call 'researchable material'.

involves analyzing raw data in light of the results of previous studies to create a deeper understanding of the material on a general level. This process demands an ability to collect researchable information in an acceptable manner, information which can be used to elucidate the research question in a reliable way. What type of information should be collected? How should it be collected and analyzed?

In order to ascertain that the collected information will be of sufficient quality, one must become acquainted with the challenges which are tied to the method used to collect the information; this work will clearly be made easier if one knows how the chosen procedure will influence the design. Many academics find it difficult to grasp what scholars from other disciplines actually do when they conduct research. The following questions are designed to facilitate understanding of what others do when they collect research information and of what their empirical material is; in addition, the questions may be used to sharpen the study focus: What type of information will be/is collected? What/who provides the information? How is the information collected? How is the information stored? How is the information analyzed?

To read about a procedure does not provide sufficient knowledge—one also needs hands-on experience. It takes experience and know-how to run a gas-chromatograph, to install a gauge in a stream, to carry out an interview, to design a survey, and to cultivate fungi. There are two juxtaposed, rather unproductive, positions which both interfere with fruitful interdisciplinary efforts: disciplinary arrogance and self-abasement. On the one hand is the arrogant researcher who without hesitation uses procedures (techniques, methods) outside his or her own field of training. This academic thinks 'I am an experienced researcher so I am capable of conducting any kind of research'. On the other hand, the self-abasing researcher can be seen claiming that one needs a certain type of education in order to be capable of conducting certain types of studies. According to this view, one should only conduct studies that strictly lie within one's own basic field-competence. For this kind of scholar, interdisciplinarity means 'I do what I was trained to do and you do what you were trained to do'.

Failure to acknowledge the experience and know-how required to acquire competence at a specific level when crossing borders may result in devastatingly low research quality, while never stepping outside the practical realm of the skills learned at the undergraduate level effectively prevents border-crossing and development. Both positions are highly problematic.

Good academic training and experience ought to result in scholarly competence on a general level, not least with regard to research procedures, resulting in what one might call a procedural competence. Through experience, the researcher learns to assess the relevance of a technique or method to the study as a whole. The time needed to acquire the necessary skills to assess or conduct a certain study is, therefore, considerably less for the experienced, open-minded researcher than for the average undergraduate student. By engaging in dialogue with scholars from other disciplines, one can, it appears, acquire a meta-competence, an ability to critically assess a study on a general, overarching level. In addition, applying this critical approach to one's own activities opens up the possibility of figuring out what specific competence is needed to use a new approach or technique in a credible manner. Thus, the success of projects that bridge academic cultures demands awareness of the fact that all research procedures are based upon a general scholarly competence as well as on specific know-how and craftsmanship. Scholarly training that encourages and strengthens the ability to reflect upon research and learning processes on a meta-procedural level will therefore facilitate both collaboration and the production of high-quality work in interdisciplinary environments. The question is designed to inspire

discussions about what type of conclusions one may draw from what type of material, a discussion which will be most useful in the formulation of future studies.

Q4: Is the information analyzed with an informed and reflective approach?

Anchoring the work in relevant literature (Q2) is a necessary requirement but not sufficient for an academic paper to be assessed as credible. Credible research must also include an informed and reflective analysis in which the study material is scrutinized and discussed in light of relevant literature. This is often clearly spelled out in, for example, the instructions of most academic journals. What can be said in relation to the points of departure in the study material? What conclusions can be drawn? Is the material related to the aim and research questions? Does the presentation of the material effectively illuminate the questions? Is the literature used (rather than regurgitated) when discussing the results? Also in a heterogeneous environment, it is possible to agree upon the meaning of an informed analysis. To pass as informed, all information must be presented, viewed and used reflexively, the evidence of the study itself as well as of the information presented in previous studies. Boix Mansilla (2004) formulates this as "the capacity to use knowledge over that of having or accumulating it."

The analysis is a creative process which rests upon and interacts with all other steps in a study, and it is, to a large extent, guided by personal preferences and interests. Instructions to authors from editors often contain terms such as 'original' and 'interesting', and scholarly work of high quality must undeniably hold both qualities. In the singular academic discipline environment, 'interesting' is generally used interchangeably with 'credible'. There are seldom reasons to ponder the differences between these concepts in such settings, since everyone has shared academic interests. Anything 'of interest' is also understood to be 'credible', provided the study is original and conducted in accordance with agreed norms.

In an interdisciplinary context, the overlap of interesting and credible is not a given. Issues that one person finds interesting, others may find utterly boring, and issues that others find exciting may appear incomprehensible (not credible) to other academics. In an interdisciplinary project, it is in every respect important to bear in mind that there are always a number of possible, and relevant, ways to proceed from any given point. Formulating an overarching aim or research question does not always provide researcher-consensus unless the discussion has led to a shared understanding of the process formulation. Hence, even though academics in general agree that a study of high quality must be informed, interesting and original, and even though it is enlightening and fruitful to discuss 'interesting' and 'original', I have come to the conclusion that these terms are difficult to use in an interdisciplinary assessment framework and it is thus advisable to concentrate on the 'informed' element. Question four is designed to inspire discussions regarding which information one is expected to manage critically and which information one might treat as common knowledge, or, in the words of Latour (1988), what kind of information we accept as "ready made science" and what we treat as "science in the making." An on-going discussion on how we distinguish the former from the latter is likely to nurture a lively and fruitful environment.

Q5: Are the form and structure consistent with agreed-norms and does the text consistently follow the chosen form and structure?

Assuming that everyone involved in the assessment process is aware of, and accepts, the proposition that a credible text may be structured in various ways and written in different

styles (the 'beauty comes in many forms' principle), all agree that the text is structured in a consistent manner (e.g. Giltrow 2002b; Day and Gastel 2006). It may appear unnecessarily pedantic to include style in the assessment of academic quality. However, to place a study in context by relating it to the relevant sources and clearly distinguishing between one's own conclusions and the thoughts, ideas, and results of others is in part a question of content and in part a question of form; in fact, form and content are intricately intertwined. Texts written by students in interdisciplinary contexts often take a shape that is unfamiliar for any of the supervising teachers and researchers and is even less familiar for persons outside the group. In order for these beginning researchers to gain recognition outside the originating environment, they must, crucially, make conscious choices, not only regarding aim, theory, and method, but also regarding style. To be able to choose, one must be aware of the available options and one must acquire sufficient skills to manage the chosen style. It is necessary that the author chooses a style that is in some way consistent with agreed-upon norms and then follow the chosen style. The question is designed to inspire discussions regarding how to interpret 'agreed-upon norms', which is a discussion that is far too seldom carried out.

Discussion

Academic credibility is, to a certain extent, a question of keeping to agreed-upon norms for how things should be done—and norms are handed on by tradition. When one starts to cross academic borders, scholarly traditions meet and mix, and the distinction between good and bad becomes blurred. Sometimes very good interdisciplinary papers may be viewed in a very negative light simply because narrow disciplinary criteria have been used to assess them (Boix Mansilla 2004). A basic prerequisite for successful interdisciplinary scholarship is thus the ability to acknowledge and navigate among contradictory or competing knowledge claims. Methods and criteria used to evaluate the quality of interdisciplinary work must, consequently, look beyond scholarly traditions while still acknowledging the importance of academic excellence. To do so, it is necessary to establish common ground for credible work, and, in order to establish common ground, it is fundamentally necessary to communicate unambiguously.

The rich literature on interdisciplinary work[9] is, unfortunately, not of much help for the newcomer. First of all, as has been pointed out by Lattuca (2001), the literature on interdisciplinary study "is a litany of geopolitical metaphors … that create the impression that academic disciplines are foreign territories and interdisciplinarians, hapless trespassers." In general, the focus is on challenges, barriers, and problems, and one easily gets the impression that interdisciplinarity is 'mission impossible'.

Second, interdisciplinarity is both a large and emerging research field, with its own theories and jargon. It is highly unlikely that either students or researchers who are just entering into interdisciplinary adventures, and who thus face the daunting challenges involved in the integration of knowledge from different disciplines,[10] will nonetheless have the fortitude to also embrace the extensive and somewhat convoluted literature on interdisciplinarity. And, even if newcomers did have the time and fortitude to become familiar with the field, their interdisciplinary aspirations would most likely be discouraged, rather than stimulated, by the readings available.

[9] For summaries, see, for example, Thompson Klein (1990), Lattuca (2001), Derry & Schunn et al. (2005).

[10] Which paradoxically are thoroughly described in the literature.

A number of tools and models have been developed with the aim of facilitating assessment of interdisciplinary research and education (e.g. Boix Mansilla and Gardner 2003; Mitrany and Stokols 2005; Thompson Klein 2005). Assessment tools put forward in the literature dealing with interdisciplinary work are, in most cases, designed for larger longitudinal projects. Such tools, for example the check-list developed by Thompson Klein (2005), may be very useful for an interdisciplinary team working on a long-term project or the assessment of the same. However, this check-list, as with most other tools developed for the assessment of interdisciplinary projects, can be off-putting for the newcomer, as well as for those involved in smaller, short-term projects, and such a tool is only tangentially applicable to most graduate or undergraduate projects. In addition, most quality assessment models demand that the participants, as well as those assessing the quality, share some kind of common ground, an expectation that creates a tautological problem as it is clear that diverging views of quality function as a major obstacle for interdisciplinary endeavors (e.g. Bradbaer 1999; Boix Mansilla and Gardner 2003; Thompson Klein 2005).

The proposed framework is designed to initiate a process which stimulates discussions about quality and credibility. Experiences gained by using the framework suggest that it is easy to use and fosters a climate that facilitates the creation of common ground, whether or not those involved in the discussion acknowledge the need to address potential communication barriers. The idea is to build on commonalities and use them as stepping stones in the creation of common ground and to separate epistemological from cultural differences. In addition, discussing the questions delineated in this paper as part of the research process will facilitate the development of self-aware learning. If such self-awareness is not developed, the cultural differences are likely to create obstacles for the management, the assessment, and, not least, the production of the research itself in any interdisciplinary work. A widened understanding of colleagues' research practices is often a key to an increased ability to distinguish bad research from differences in disciplines. The challenge is to learn to see beyond the style and to learn how to identify and use a common language to distinguish between good and bad research. This will not solve all problems but certainly minimize one of the major obstacles for interdisciplinary projects.

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