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Reconfiguring interdisciplinary and transdisciplinary spaces for Arts, Humanities and Social Sciences integration

Reconfigurando espaços interdisciplinares e transdisciplinares para a integração das Artes, Humanidades e Ciências Sociais

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Abstract

Interdisciplinarity and transdisciplinarity denote a diversity of practices and present specific challenges to collaboration in research and education. One of those challenges is the integration of Arts, Humanities and Social Sciences (AHSS). The roles these disciplines perform in inter- and transdisciplinary research and education are often mostly limited to instrumental and subordinate ones. Unequal participation of these disciplines causes their exclusion from scientific communities, also affecting career paths of early and senior researchers. I present some results from the project entitled «Shaping interdisciplinary practices in Europe» (SHAPE-ID) that addresses the problem of how to better integrate AHSS disciplines in interdisciplinarity and transdisciplinarity. I conducted a systematic literature review and identified spaces in which integration is performed and roles that AHSS researchers fruitfully develop in an inter- or transdisciplinary setting. I discuss how to facilitate the participation of AHSS researchers by reconfiguring inter- and transdisciplinary spaces and roles. I conclude that AHSS disciplines' participation in collaborative settings is limited and affects the type of inter- and transdisciplinary knowledge production processes that are driven. This has a direct effect on how senior researchers perceive their academic careers and set the research agenda. But also, on how early career researchers build their academic future.

Keywords: Interdisciplinarity, transdisciplinarity, roles, integration, Arts Humanities and Social Sciences.

Resumo

Interdisciplinaridade e transdisciplinaridade denotam uma diversidade de práticas e apresentam desafios específicos à colaboração na investigação e educação. Um desses desafios é a integração das Artes, Humanidades e Ciências Sociais (AHSS). Os papéis que estas disciplinas desempenham na investigação e educação interdisciplinar e transdisciplinar são muitas vezes limitados a instrumentais e subordinados. A participação desigual destas disciplinas provoca a sua exclusão das comunidades científicas, afectando também os percursos profissionais dos

investigadores principiantes e seniores. Apresento alguns resultados do projecto intitulado "Shaping interdisciplinary practices in Europe" (SHAPE-ID) que aborda o problema de como integrar melhor as disciplinas de AHSS na interdisciplinaridade e transdisciplinaridade. Realizei uma revisão sistemática da literatura e identifiquei espaços em que a integração é realizada e papéis que os investigadores do AHSS frutuosamente desenvolvem num ambiente interdisciplinar ou transdisciplinar. Discuti como facilitar a participação dos investigadores de AHSS reconfigurando espaços e papéis interdisciplinares e transdisciplinares. Concluo que a participação de disciplinas AHSS em ambientes colaborativos é limitada e afecta o tipo de processos de produção de conhecimento interdisciplinar e transdisciplinar que são conduzidos. Isto tem um efeito directo na forma como os investigadores seniores encaram as suas carreiras académicas e estabelecem a agenda de investigação. Mas também na forma como os investigadores em início de carreira constroem o seu futuro académico.
Palavras-chave: Interdisciplinaridade, transdisciplinaridade, papéis, integração, Artes Humanas e Ciências Sociais.

Introduction

Interdisciplinarity (ID) and transdisciplinarity (TD) denote a diversity of practices and present specific challenges to collaboration in research and education. ID and TD constitute an array of interrelations between disciplines and bodies of knowledge, immersed in a process of negotiation (BARRY; BORN, 2013).

One of those identified challenges is the integration of Arts, Humanities and Social Sciences (AHSS) in interdisciplinary and transdisciplinary research and education. The roles these disciplines perform in research and education are often mostly limited to instrumental and subordinate ones (VIENNI BAPTISTA et al., 2020; forthcoming). Unequal participation of AHSS researchers in ID/TD causes their exclusion from scientific communities, also affecting career paths of early and senior researchers. While policy reports frequently highlight the contribution AHSS disciplines can potentially make to solving societal challenges (KANIA et al., 2019), the academic literature suggests that humanities researchers are seen to have little to offer to ID/TD, and their contributions are thought difficult to integrate (VIENNI BAPTISTA et al., 2019).

The challenge, therefore, is not to arrive at a single understanding that obscures differences in inter- and transdisciplinary practices, but to build dialogue

between different understandings while recognising their differences (VIENNI BAPTISTA et al., 2019; VIENNI BAPTISTA; POHL, forthcoming). In this sense, ID and TD research and learning spaces have shown to be a dynamic and synergetic phenomenon in which different processes of knowledge production take place (RIEDY et al., 2016). The proposed transformations of universities call for collaborative approaches, in terms of organisation, research and teaching. However, there is no universal or ready-made model to guide these changes (GÖRANNSON et al., 2009).

In this paper, I problematise the spaces and roles in which ID/TD are performed to seek to integrate AHSS in meaningful ways. The concept of “betweens” to disentangle what happens in a symbolic space created by the prefix “inter-” and “trans-” in inter- and transdisciplinary research and teaching is still a promising but under-studied topic in the literature (CALLARD; FITZGERALD, 2015; FITZGERALD et al., 2014a). In terms of AHSS integration, it can lead to creative spaces where processes of knowledge integration can take place.

Hence, this paper studies spaces and roles of AHSS in collaborative settings by presenting some results from an ongoing H2020 project entitled «Shaping interdisciplinary practices in Europe» (SHAPE-ID)[1]. The project addresses the problem of how to better integrate AHSS disciplines in inter- and transdisciplinary research. Based on findings from a systematic literature review on this topic, I discuss the spatial reconfigurations for inter- and transdisciplinary research and teaching and their implications for AHSS integration.

The paper is organised as follows: first, I look at definitions of ID and ID and present the challenges that AHSS disciplines currently face. I then detail the methods applied to develop a systematic literature review of spaces and roles of AHSS disciplines in ID/TD. Next, I provide some examples of such spaces and how AHSS

[1] This research is framed in the project Shaping interdisciplinary practices in Europe (SHAPE-ID), which has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 822705. More details on the project: shapeid.eu

can play fruitful roles in integrative settings. I discuss and conclude with some of the implications of these findings.

Problematising inter- and transdisciplinary configurations

This paper is based on the concept of problematisation elaborated by Paul Rabinow (2006, 2016). In this study, problematisation is a framing orientation and a mode of inquiry (see VIENNI BAPTISTA; POHL, forthcoming). As Barry et al. (2008, 21) state it, I am interested in the contemporary formation of ID and TD, in particular in "(…) the question of whether a given knowledge practice (…) has become an issue and an object of enquiry for governments, funding agencies and researchers themselves".

A problematisation, in the sense that Rabinow defines the term, is based on the conceptual frame of Michel Foucault who considers it as a practical context for thinking. To analyse a historical situation as a problematisation is to inquire into "how and why certain things (behaviour, phenomena, processes) became a problem" (FOUCAULT, 1984, p. 171).

The Anthropology of the Contemporary (Rabinow, 2006, 4), in which problematisation is anchored

> consists of analytic work that helps develop modes of inquiry, into under-determined, emergent and discordant relations. It seeks to develop methods, practices, and forms of inquiry and narration coherent and co-operable with understandings of the mode (or modes) taken by Anthropos as figure and an assemblage today.

In what follows, I problematise the different spaces in which integration is performed and roles that are assigned to AHSS disciplines in ID/TD. I take into consideration related studies (BARRY; BORN, 2013; CALLARD et al., 2015; FITZGERALD et al., 2014b; VIENNI BAPTISTA; POHL, forthcoming; to name a few).

In this sense, there are several challenges that AHSS disciplines face when participating in integration processes (VIENNI BAPTISTA et al., forthcoming). Among those challenges, definitions of ID/TD are contested discourses (BARRY; BORN,

2013; KLEIN, 2014; LURY, 2018; LYALL, 2019). For the purpose of this paper, I argue that the heterogeneity of understandings in ID/TD constitutes an asset in research and policy (VIENNI BAPTISTA; POHL, forthcoming). I put this plurality at the centre of my attention, acknowledging that differences between definitions help to advance ID/TD in science, education and policy.

The range of understandings about ID/TD are reflected in practice in the way's partners build their collaboration (VIENNI BAPTISTA et al., 2019). Following Barry and Born (2013), the relations between disciplines in a collaboration can be understood as taking one of several forms:

- In a 'subordination-service' relationship, one or more disciplines occupy a subordinate or service role conceived as making up for an absence or lack in others;
- In an 'integrative-synthesis' relation disciplines are integrated in a more symmetrical manner;
- In an 'agonistic-antagonistic' relationship there is a commitment to more radical shifts in knowledge practices occurring through collaboration.

The different roles research partners may play is often underpinned by assumptions about the purpose of the collaboration, as I will show in the next section. For instance, Barry and colleagues (2008) identify three logics that are embodied in interdisciplinary practices:

- The logic of accountability is best represented by efforts to introduce forms of knowledge that can be seen to provide ethical or societal oversight in science and technology projects;
- The logic of innovation understands the purpose of interdisciplinarity as better understanding societal needs to enable industry to address them;
- The logic of ontology represents more thoroughgoing efforts to transform the practice of research and training, inside and outside the academy, leading to the generation of novel problems, objects and relations of research, as well as interdisciplinary subjectivities.

The prefix “inter-“ is a point of focus of this study. Callard and Fitzgerald (2015) argue a problem stays in the prefix “inter-“, denoting both spatial and temporal “betweens” and locating the point of interest between intervals of time and between parts of things.

In this sense, Homi Bhabha’s (2004) concept of “in-between spaces” is a useful tool to analyse cultural processes and formations of communities in-between established knowledge and action domains, such as disciplines or societal fields (see VILSMAIER et al., 2017). The author considers the “in-between” as the cutting edge of translation and negotiation that carries the burden of the meaning of culture, as the designations of identity, as the process of symbolic interaction, and the connective tissue that constructs the difference (BHABHA, 2004). The temporal movement and passage that it allows, prevents identities at either end of culture from settling into primordial polarities, which I consider constitutes the main aspect needed to develop fruitful spaces in inter- and transdisciplinary settings. In the same way, Felt and colleagues (2016) define this process of knowing and living knowledge as a “shared epistemic arena”.

I study the spaces in which AHSS integration is developed looking at the “in-between” and identifying the roles that are assigned in ID/TD to these disciplines. I argue that to improve AHSS integration in ID/TD, then, focus has to change from definitions that apply a normative vision on how ID/TD must be done to an analysis of the different ways to “inter-“disciplines, bodies of knowledge, epistemologies, ontologies, and methods (FITZGERALD; CALLARD, 2015; FITZGERALD et al., 2013; RABINOW; BENNETT, 2009).

Methods

Based on a previous study (VIENNI BAPTISTA et al., 2019; 2020), I performed a systematic review of the academic literature on ID/TD in the form of a meta-ethnography (JAHAN et al., 2016; NOBLIT; HARE, 1988). This is a theory-based interpretive method for qualitative evidence synthesis. The intention of meta-

ethnography is to produce a new configuration or interpretation of the selected data (UNY et al., 2017).

A meta-ethnography comprises seven phases defined by Noblit and Hare (1988): (1) getting started, (2) deciding what is relevant to the initial interest, (3) reading the studies, (4) determining how the studies are related, (5) translating the studies into one another, (6) synthesising translations; and (7) expressing the synthesis.

This study is based on a larger query done in Web of Science (WoS), Scopus and JSTOR databases for records on IDR and TDR from 1990 until 2020 within the SHAPE-ID project (see VIENNI BAPTISTA et al., 2019; 2020). After removal of duplicates, a first selection was done based on titles and abstracts of 5040 records. From those 937 records, two researchers performed parallel independent assessments of the titles and abstracts in a second loop. After this, a total of 95 records were selected for the meta-ethnography and qualitative content-analysis (CORBIN; STRAUSS, 2008; FRANCE et al., 2014).

Grounded Theory (CORBIN; STRAUSS, 1998, 2008) was the main method guiding the analysis while complemented by the use of categorial thinking (FREEMAN, 2017). During Phase 4, I followed three key steps: (1) documenting data (concepts, themes, metaphors, findings) and how they relate to each other within each study account, (2) juxtaposing or comparing the data across studies; and (3) using those data to determine the relationship between studies (FRANCE et al., 2019). In Phases 5 and 6, I translated the studies into one another using the codes related to spaces and roles performed by AHSS disciplines, as I elaborate on the next section.

Results

The academic literature highlights that AHSS disciplines are usually perceived as having little to contribute and their contributions are mainly difficult to understand and integrate in ID/TD (CALLARD; FITZGERALD, 2015; FITZGERALD et al., 2013;

2014b; ROBINSON et al., 2016). Following P. C. Snow (1964), Robinson and colleagues (2016) submit that the lack of interdisciplinary interaction involving scientists and humanists is less about hostility and more about mutual ignorance. As a means to overcome this obstacle, I analyse the varied ways in which the AHSS disciplines interact with other disciplines[2].

Balmer (2013) characterises collaborative spaces as an emergent mode of social scientific collaboration. Taking his approach as an inspiration, I identify different types of connections and relationships between AHSS and STEMM[3] disciplines in the academic literature (Vienni Baptista et al., 2020). As the following quote indicates,

> However, reflections on our positions within technoscience have often paid little attention to the actual dynamics of these relationships, so that whilst some of the ontological and epistemological challenges of different forms of interdisciplinarity have been mapped (BARRY et al., 2008) we have only a few examples of what it is like to work day to-day in these spaces (BALMER et al., 2015, 4).

Some authors, such as Mäki (2016), consider that these connections can develop into new models for the Humanities within interdisciplinary settings. Table 1 provides some examples of the connections identified in the academic literature (based on VIENNI BAPTISTA et al., 2020). These are presented in a gradient – from connections that allow for active participation of AHSS disciplines in ID/TD to those that imply less interaction with other fields of knowledge.

These relationships provide a setting for better understanding the factors that influence AHSS integration in ID/TD, as I elaborated somewhere else (VIENNI BAPTISTA et al., 2020). To give an example, academic tribalism is identified as one of the factors that usually hinders AHSS integration, due to “silos” that cannot be transformed. If researchers embark on “coupled ethical-epistemological” research (as

[2] This study is part of an extensive academic literature review. More details are presented in Vienni Baptista et al., 2019 & 2020.
[3] Science, Technology, Engineering, Mathematics and Medicine.

Tuana (2013) defines it), different disciplines work together on integrating ethical values that help to dissolve those silos.

Table 1 Types of relationships between AHSS and STEMM disciplines

Type of relationship	Variants	Description
Coupled Ethical-Epistemological Research		Integrating ethical and epistemological values in research (TUANA, 2013). Dialogue that allows partners to rethink values and assumptions embedded in research practices (TUANA, 2013).
Epistemological Pluralism		An approach to conducting innovative and collaborative research while acknowledging several valuable ways of knowing (MILLER et al., 2008).
Experimental Entanglement	Critique Ebullience Interaction	These connections or "experiments" "(…) take place as much in the relationships that unfold between collaborators, in the interventions that they choose to make in their respective fields, in the various ways that historical archives might be reopened, as much as they do in regular scientific protocols to produce new data" (CALLARD; FITZGERALD, 2015, 9).
Transformational (specifically for Sustainability challenges)	Building capabilities Critique Deconstruction & emancipation Design & reflect TD processes Evidence & contingency	These are different ways in which SSH can potentially contribute to sustainable development initiatives (according to EJDERYAN et al. 2019).
Intersecting Knowledge Claims Scenarios	Conflict Cooperation & Identification Tolerant Ambivalence Transformation	These encounters ensue "when different forms of knowledge intersect and span the range from the divisive conflict to radical transformation" (MACMAYNOWSKI, 2017, 4).
Values – Productive Convergence		Values "serve as a ground for collaborative interaction between the humanities and the sciences" (ROBINSON et al., 2016, p. 2). "Values (…) help underwrite important theoretical principles of knowledge production (…) as well as non-epistemic principles of conduct" (Robinson et al., 2016, p. 2).
Trespassing		"(…) a form of transport or translation; someone with

	knowledge was basically someone who went somewhere and brought something without transforming it in ways that were detrimental to knowing thigs about it" (OSBORNE, 2013, p. 88).
Parasitism	According to T. Osborne (2013) this implies borrowing from another discipline in a unilateral manner.
Poaching	"The poacher ventures into another field, takes what he or she understands to be the key insights of that field, and then seeks to return these to his or her own area of research" (OSBORNE, 2013, 87).

To expand on table 1, below I present three examples that show the differences found in the types of relationships between AHSS and STEMM disciplines. These relationships are not always predefined in an inter- or transdisciplinary setting, but they can change according to the aims and goals pursued by the project or program. Based on a previous study (VIENNI BAPTISTA et al., 2020), I show how relationships can be fruitful for AHSS integration (as experimental entanglements) or have a more specific purpose (as parasitism):

- Experimental entanglement: can take the form of (i) critique; (ii) interaction; or (iii) an ebullient relationship leading to long-term collaborative work (CALLARD; FITZGERALD, 2015). In the last case, the ebullient mode tends to take experimental experiences as a means to create active and prominent connections between natural and social sciences (CALLARD; FITZGERALD, 2015). These spaces are useful, for example,

> to shed new light on the multiple meanings of climate change in diverse cultures, and to create new entry points for policy innovation, the interpretative social sciences, arts and humanities need new spaces for meeting as equals with the positivist sciences (BROM, 2019, 4).

- Coupled Ethical-Epistemological research: these connections are related to value decisions embedded in research models and methods (TUANA, 2013). Making these values transparent and examining how they couple with ethical and epistemological decisions in research is an under-represented resource in

most interdisciplinary projects (TUANA, 2013). This model can add resources and dialogue between knowledge practices by rethinking and recreating ethical assumptions in a research project.

- Parasitism: this type of connection allows “cross-fertilization” among disciplines as Osborne (2013) suggests. It is a type of behaviour that takes the form of “borrowing”, where one discipline takes advantage of another in a unilateral knowledge production process. According to Osborne (2013), this type of relationship does not really count as IDR, but it is quite normal in many AHSS disciplines as part of their daily work.

Different kinds of spaces for interaction help or hinder different roles assigned to AHSS disciplines (BALMER et al., 2015). Roles and spaces, in turn, are defined by factors that hinder or help inter- or transdisciplinary integration and collaborations. Power relations, for instance, can act as a facilitator for disciplinary integration, or on the contrary, define more instrumental roles for lower status disciplines.

My approach seeks to address the messiness and complementary functions that researchers perform simultaneously in an academic environment. Performing roles shows that researchers are “chameleonic in their relationships” as they try to maintain connections with STEMM and even between AHSS disciplines (BALMER et al., 2015). The affective and emotional factors are relevant in this respect; they are important in helping researchers to position themselves in certain roles while closing others off. These factors are so powerful that they can shape our ability to move from one role to the other (BALMER et al., 2015).

The roles identified in the literature review range from more positive or proactive to negative ones. The list below addresses different functions that can overlap and coexist in a research process. Based on Vienni Baptista and colleagues (2020), some roles are:

- Colleague: Main features of this role are collaboration and the willingness to support a collective process of knowledge production. “In some ways, the relationships between engineers and social scientists are not notably different

from those that AHSS researchers develop among themselves" (BALMER et al., 2015, 18).

- Co-producer of knowledge: He/she has the ability to entangle representations of values, science, and research (CALLARD; FITZGERALD, 2015). In some ways, this role remains an aspiration in collaborative relationships (BALMER et al., 2015) due to the complex tasks and efforts that he/she has to undertake to accomplish it. Many researchers recognise the relevance of this role for AHSS integration in IDR/TDR (see SPAAPEN et al., 2020). "This role can also become problematic when we find ourselves contributing to an element of the project that we remain uncomfortable with" (BALMER et al., 2015, 18).
- Critic: He/she has a critical perspective on research and science and questions knowledge and its nature. It is related to the critique discourse in ID/TD (KLEIN, 2014). A critical stance can, in occasions, be interpreted as resentment (RABINOW; BENETT, 2012) and also as joyless (BALMER et al., 2015).
- Educator: This role supports educational processes within a team, and it is explicitly pedagogical (BALMER et al., 2015). It also provides a reflexive perspective on research.
- Foreteller This role is usually assigned to AHSS researchers as having the capacity to predict the impact of social research and unknown conflicts. AHSS researchers might emphasise being

> interested in the upstream processes and governance of science and innovation. This insistence (…) can lead us to be cast in the role of "foreteller", and (…) can lead to the expectation that our role is to forecast the way (…) in which a particular technology will or should develop, and how it will be apprehended by various publics (BALMER et al., 2015, 10).

- Playfulness: He/she provides joy and fun to a team as a means to a more productive research process. This is an innovative role that implies "the work of self-constitution and selfcare as part of the knowledge production" (Balmer, 2013, 3). This role is a "lens through which to look for opportunities to change

our own practices in hopes of producing more exciting relationships with our colleagues" (BALMER, 2013, 3).

More instrumental roles assigned to AHSS researchers are identified as:

- Reducing complexity: In this case, AHSS researchers apply specific skills to increase clarity and transferability of research outputs and their ability to translate those into a less complex fashion. "A deeper understanding of complexity, (…) as a social phenomenon is required, which can be guided by metaphors (…)" (NOWOTNY, 2005, 29) provided by AHSS researchers, for instance.
- Reflexivity Inducer: Researchers with the ability to facilitate research processes who help to disentangle conflicts in a team and induce reflexive processes. One example of how this role can be fruitfully performed by AHSS researchers is provided by Nowotny (2005, 29): they "(…) bring to it their knowledge and practice of history, being able to prove into how the past was perceived, understood and lived by former generations and to what effect".
- Representative of the Public: This role implies communicative skills and the ability to translate scientific knowledge to the lay audience. According to Balmer et al. (2015, 9) "(…) this role often serves as the initial position from which we are forced to negotiate more substantive relations with the synthetic biology world". This means that AHSS researchers are usually asked to deliver "outreach" to obtain more "public acceptability" of research outputs (BALMER et al., 2015, 9).

Roles as the "wife" and the "trickster" show the pervasive stereotypes that can hinder AHSS participation in ID/TD. On the one hand, the "wife" embeds a gendered character (Balmer et al., 2015). Together with good advice and support to the team,

researchers performing this role end up managing the emotional labour of collaboration (Balmer et al., 2015). “Here we identify three central facets of the wifely role: being dutiful, gossiping, and being trophy” (Balmer et al., 2015, 11).

On the other, the “trickster” represents a character that exhibits a great degree of intellect or secret knowledge and uses it to play tricks or otherwise disobey normal rules and conventional behaviour in a research setting (BALMER et al., 2015).

Roles assigned to AHSS researchers have also opened a discussion in the academic literature related to a “collaborative turn” in humanities and social science scholarship (FITZGERALD et al., 2014a; BALMER et al., 2015). This is usually summarised as the need for humanities to contextualise or decontextualise science advice (BROM, 2019). Acknowledging roles assigned to AHSS disciplines is a means to promote a cultural change towards more participatory and varied tasks assigned to these disciplines (VIENNI BAPTISTA et al., 2019; 2020).

Taking these two sets (spaces and roles) into consideration for AHSS integration helps to understand the multiple dimensions that are at stake in ID/TD. These relationships or inner dialogues among disciplines might help to bridge the gap between AHSS and STEMM integration. Analysing the roles assigned to AHSS disciplines can encourage them to reposition themselves, developing new connections and relationships with STEMM disciplines. These can lead to reconfigurations of the natural sciences, humanities and social sciences, as Barry and Born (2013) argue.

Conclusions and final remarks

Throughout this paper, I claimed that roles of AHSS disciplines in ID/TD raise questions about how to integrate these disciplines not replicating instrumental functions usually assigned to them. From this analysis, one major insight emerges: a demand (and responsibility) to reassess AHSS roles and functions in ID/TD so that these disciplines can contribute fully in inter- and transdisciplinary settings (VIENNI BAPTISTA et al., 2020).

Thus, I argue that acknowledging these different roles and spaces in which ID/TD are performed, substantially improve inter- and trans-disciplinary research policy making and funding by giving institutions a clearer understanding of the conditions that are needed, in each case, to support ID and TD. Such changes could also support young researchers wanting to focus on ID/TD in their academic career. Acknowledging this urgency entails that researchers and funders alike recognise that ID and TD are conducted for different purposes and are conceived in different ways, for example, as: (i) objects of study; (ii) methods, and/or (iii) phenomena that vary according to historical and geographical contexts (BaRRY; BORN, 2013; CALLARD; FITZGERALD, 2015).

The current biggest challenge for AHSS disciplines is to fight prejudice and misconceptions, both among researchers and policymakers (SPAAPEN et al., 2020). Findings show that the subordinate roles and functions assigned to AHSS disciplines, discourage their greater involvement with STEMM disciplines in ID/TD. The problem has two sides. On the one side, AHSS researchers have a responsibility to show more willingness to collaborate with other disciplines. On the other side, as Spaapen et al. (2020) confirmed funders and policy makers also have a responsibility to change things for the better within ID/TD.

In conclusion, a fundamental re-evaluation of AHSS is needed. We should also keep in mind that this is not a new problem but one that might be solved using a varied set of strategies. History of science shows how discontinuities (FOUCAULT, 1984) and different ways of doing science, that builds on new research spaces as the ones detailed in this paper.

New types of ID/TD impact can be elaborated taking into consideration these spaces to work on better approaches to societal challenges. Such wider understanding and acceptance could stimulate researchers, and especially young researchers, to engage in inter- and transdisciplinary research and teaching: recognising that ID and TD are conceived for different purposes and conducted in different ways.

References

BALMER, A. S. **Play in Interdisciplinary Collaboration between Natural and Social Scientists**. Paper presented at the 4S/EASST Copenhagen, 2013.

BALMER, A. S.; CALVERT, J.; MARRIS, C.; MOLYNEUX-HODGSON, S.; FROW, E.; KEARNES, M.; MARTIN, P. (2015). Taking roles in interdisciplinary collaborations: Reflections on working in post-ELSI spaces in the UK synthetic biology community. **Science & Technology Studies**, v. 8, n. 3, 2015. 3-25.

BARRY, A.; BORN, G. **Interdisciplinarity: Reconfigurations of the social and natural Sciences.** New York: Routledge, 2013.

BARRY, A., BORN, G.; WESZKALNYS, G. Logics of interdisciplinarity. **Economy and Society**, v. 37, n. 1, 2008. 20-49. DOI:10.1080/03085140701760841

BHABHA, H. **The location of culture**. New York: Routledge, 2004.

BROM, F.W.A. Institutionalizing applied humanities: enabling a stronger role for the humanities in interdisciplinary research for public policy. **Palgrave Communications**, v. 5, n. 72, 2019. DOI: https://doi.org/10.1057/s41599-019-0281-2

CALLARD, F.; FITZGERALD, D. **Rethinking interdisciplinarity across the social sciences and Neurosciences**. London: Palgrave Macmillan UK, 2015.

CALLARD, F.; FITZGERALD, D.; WOODS, A. (2015). Interdisciplinary collaboration in action: tracking the signal, tracing the noise. **Palgrave Communications**, v. 1, 15019. DOI:10.1057/palcomms.2015.19

CORBIN, J. M.; STRAUSS, A. L. **Basics of qualitative research**: techniques and procedures for developing grounded theory (Second ed. ed.): Thousand Oaks, Calif. [etc.]: Sage Publications, 1998.

CORBIN, J. M.; STRAUSS, A. L. **Basics of Qualitative Research** (3rd ed.): Techniques and Procedures for Developing Grounded Theory. Thousand Oaks, Calif. [etc.]: Sage Publications, 2008.

EJDERYAN, O.; SCHNEIDER, F.; BORNEMANN, B.; KLÄY, A. How social sciences and humanities can contribute to transformative science. **GAIA - Ecological**

Perspectives for Science and Society, v. 28, n. 2, 2019. 160-162. DOI: https://doi.org/10.14512/gaia.28.2.15

FELT, U.; IGELSBÖCK, J.; SCHIKOWITZ, A.; VÖLKER, T. Transdisciplinary Sustainability Research in Practice. Between imaginaries of collective experimentation and entrenched academic value orders. **Science, Technology and Human Values**, v. 41, n. 4, 2016. 732-61.

FITZGERALD, D.; CALLARD, F. Social Science and Neuroscience beyond Interdisciplinarity: Experimental Entanglements. **Theory, Culture & Society**, v. 32, n. 1, 2015. 3-32. DOI:10.1177/0263276414537319

FITZGERALD, D.; JONES, N.; CHOUDHURY, S.; FRIEDNER, M.; LEVIN, N.; LLOYD, S.; RAIKHEL, E. The collaborative turn: Interdisciplinarity across the human sciences. 2014b. Disponível em: http://somatosphere.net/2014/the-collaborative-turn-interdisciplinarity-across-the-human-sciences.html/ Acesso em 14 dez.2020.

FITZGERALD, D.; LITTLEFIELD, M. M.; KNUDSEN, K. J.; TONKS, J.; DIETZ, M. J. Ambivalence, Equivocation and the Politics of Experimental Knowledge: A Transdisciplinary Neuroscience Encounter. **Social Studies of Science**, v. 44, n. 5, 2014a. 701–21.

FOUCAULT, M. **Fearless Speech**. Edited by Joseph Pearson. New York: Semiotext(e), 1984.

FRANCE, E. F.; CUNNINGHAM, M.; RING, N.; UNY, I.; DUNCAN, E. A. S.; JEPSON, R. G.; NOYES, J. Improving reporting of meta-ethnography: the eMERGe reporting guidance. **BMC Medical Research Methodology**, v. 19, n. 1, 2019. DOI:10.1186/s12874-018-0600-0

FRANCE, E. F.; RING, N.; THOMAS, R.; NOYES, J.; MAXWELL, M.; JEPSON, R. A methodological systematic review of what's wrong with meta-ethnography reporting. **BMC Medical Research Methodology**, v. 14, n. 1, 2014. 119. DOI:10.1186/1471-2288-14-119

FREEMAN, M. **Modes of thinking for qualitative data analysis**. New York: Routledge, 2017.

GÖRANNSON, B.; AROCENA, R.; SUTZ, J. (2009a). **Introduction Science and Public Policy**, v. 36, n. 2, March 2009. 83–84.

JAHAN, N.; NAVEED, S.; ZESHAN, M.; TAHIR, M. A. How to Conduct a Systematic Review: A Narrative Literature Review. **Cureus**, v. 8, n. 11, 2016. e864-e864. DOI:10.7759/cureus.864

KANIA, K.; LEMAIRE, C.; SWINNEN, L. **Integration of social sciences and humanities in Horizon 2020**. Participants, budget and disciplines: 4th monitoring report on SSH flagged projects funded in 2017 under the societal challenges and industrial leadership priorities. Directorate-General for Research and Innovation – European Commission, 2019. Disponível em: https://op.europa.eu/en/publication-detail/-/publication/f094a641-30dd-11e9-8d04-01aa75ed71a1/language-en/format-PDF/source-86826299 Acesso em: 13 dez. 2020

KLEIN, J. T. Prospects for transdisciplinarity. **Futures**, v. 36, n. 4, 2014. 515-26. DOI: https://doi.org/10.1016/j.futures.2003.10.007

LURY, C. Introduction: Activating the present of interdisciplinary methods. In LURY, C.; FENSHAM, R.; HELLER-NICHOLAS, A.; LAMMES, S.; LAST, A.; MICHAEL, M.; UPRUCHARD, E. (orgs.). **Routledge handbook of interdisciplinary research methods** (pp.1-23). London: Routledge, 2018.

LYALL, C. **Being an Interdisciplinary Academic**. How institutions shape university careers. London: Palgrave Pivot, 2019.

MACMYNOWSKI, D. P. (2007). Pausing at the Brink of Interdisciplinarity: Power and Knowledge at the Meeting of Social and Biophysical Science. **Ecology and Society**, v. 12, n. 1, 20. [online] Disponível em: http://www.ecologyandsociety.org/vol12/iss1/art20/ Acesso em: 13 dez.2020.

MÄKI, U. Philosophy of interdisciplinarity. What? Why? How? European **Journal for Philosophy of Science**, v. 6, n. 3, 2016. 327-342. DOI:10.1007/s13194-016-0162-0

MILLER, T. R.; BAIRD, T. D.; LITTLEFIELD, C. M.; KOFINAS, G.; CHAPIN, F. S.; REDMAN, C. L. (2008). Epistemological Pluralism: Reorganizing Interdisciplinary Research. **Ecology and Society**, v. 13, n. 2, 2008. 46. DOI:10.5751/ES-02671-130246

NOBLIT, G. W.; HARE, R. D. **Meta-ethnography**: synthesizing qualitative studies. Volume 11, Newbury Park: Sage, 1988.

NOWOTNY, H.; GIBBONS, M.; SCOTT, P. **Rethinking science**. Knowledge and the public in an age of uncertainty. Cambridge: Polity Press, 2001.

OSBORNE, T. Inter that Discipline! In BARRY, A.; BORN, G. (Eds.), **Interdisciplinarity**: Reconfigurations of the Social and Natural Sciences (pp. 82-98). London: Routledge (2013).

RABINOW, P. Movement space: Putting anthropological theory, concepts, and cases to the test. **Hau: Journal of Ethnographic Theory**, v. 6, n. 1, 2016. 403-431.

RABINOW, P. Steps toward an anthropological laboratory. **ARC Concept Note**, 1, February 2, 2006.

RABINOW, P.; BENNETT, G. **Designing human practices**: an experiment with synthetic biology: Chicago: The University of Chicago Press, 2012.

RABINOW, P.; BENNETT, G. Synthetic biology: ethical ramifications 2009. **Systems and synthetic biology**, v. 3, n. 1-4, 2009. 99-108. DOI:10.1007/s11693-009-9042-7

RIEDY, C.; FAM, D. M.; ROSS, K.; MITCHELL, C. Transdisciplinarity at the Crossroads: Nurturing Individual and Collective Learning. **Technology Innovation Management Review**, v. 8, n. 8, 2018. 41-49.

ROBINSON, B.; VASKO, S. E.; GONNERMAN, C.; CHRISTEN, M.; O'ROURKE, M.; STEEL, D. Human values and the value of humanities in interdisciplinary research. **Cogent Arts & Humanities**, v. 3, n. 1, 2016. 1123080. DOI:10.1080/23311983.2015.1123080

SNOW, C. P. **The two cultures** (14th printing ed.): Cambridge: Cambridge University Press, 1964.

SPAAPEN, J.; DIJSTELBLOEM, H.; WAMELINK, F. **Evaluating research in context**. A method for comprehensive research assessment (2nd edition). The Hague: Consultative Committee of Sector Councils for Research and Development (COS), 2007.

TUANA, N. Embedding philosophers in the practices of science: bringing humanities to the sciences. **Synthese**, v. 190, n. 11, 2013. 1955-1973. DOI:10.1007/s11229-012-0171-2

UNY, I.; FRANCE, E. F.; NOBLIT, G. Steady and delayed: explaining the different development of meta-ethnography in health care and education. **Ethnography and Education**, v. 12, n. 2, 2017. 243-257. DOI:10.1080/17457823.2017.1282320

VIENNI BAPTISTA, B.; MARYL, M.; WCIŚLIK, P.; FLETCHER, I.; BUCHNER, A.; POHL, C. Final report on Understandings of Interdisciplinary and Transdisciplinary Research and Factors of Success or Failure. 2020. DOI: https://doi.org/10.5281/zenodo.3760417

VIENNI BAPTISTA, B.; MARYL, M.; WCIŚLIK, P.; FLETCHER, I.; BUCHNER, A.; WALLACE, D.; POHL, C. **Preliminary Report of Literature Review on Understandings of Interdisciplinary and Transdisciplinary Research**. 2019. DOI: https://doi.org/10.5281/zenodo.3760417

VIENNI-BAPTISTA B.; POHL C. Problematizing interdisciplinarity and transdisciplinarity to shape the scientific and policy discourse. **Science and Public Policy**. (forthcoming).

VIENNI-BAPTISTA B.; FLETCHER I.; SPAAPEN J.; WALLACE D.; OHLMEYER J. Shaping the integration of arts, humanities and social sciences in interdisciplinary and transdisciplinary research: what needs to change to meet this challenge? In BRAIDOTTI R.; CASPER-HEHNE H. (eds). **World Humanities Report**. European Team. Berlin: Volkswagen Foundation, forthcoming.

VILSMAIER, U.; BRANDNER, V.; ENGBERS, M. Research In-between: The Constitutive Role of Cultural Differences in Transdisciplinarity. **Transdisciplinary Journal of Engineering & Science**, v. 8, n.1, 2017. DOI: https://doi.org/10.22545/2017/00093

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