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SESSION 2. COMMENTARY AND PROVOCATION

THE CHALLENGES OF TRANSLATING AS A CULTURAL ENCOUNTER

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In dealing with RF-Q2, one of the central themes that arises is the one of translating teacher resource use from one cultural context to another. In fact, two of the three papers of this RF session deal with the difficulties that researchers have found in translating the ideas of the DAD into other languages. Before I comment on the challenges of translation, and using the DAD as an example, I present a short overview of what we may term the epistemological apparatus of the DAD.

The epistemological apparatus of the DAD

At the epistemological core of the DAD lies the concept of resource—a concept that appears to have different meanings in current mathematics education literature. An encompassing meaning was suggested by J. Adler: everything that can re-source the teacher activity (see Shao et al.). In the DAD, however, for something to be a resource, a *schema of usage* is required. The alluded schema must be understood in the sense of Vergnaud’s reformulation of Kant/Piaget’s idea, namely in terms of *psychological operative invariants* that organize human behaviour for a given class of situations. As we can see, there is, in the concept of schema, a removal of materiality—an abstraction in Aristotle’s sense—that gives the schema its invariance and readiness to be used in front of similar situations. And this is how the schema appears in the DAD (see, e.g., Trouche, 2004).

The ergonomic approach that runs underneath the DAD brings to the fore the need to somehow reverse the Aristotelian abstraction in the didactic cogitations and to return to the materiality of the world. This materiality did not seem to have been relevant to Kant who found in the faculties of the mind (e.g., the faculties of understanding and imagination) enough ingredients to account for its functioning, or to Piaget for whom the objects of his experiments were instrumental means to elicit the logical-mathematical children’s schemes. Materiality is the substance of the ergonomic approach, which is a response to late modernity: precisely, a response about our dealings with concrete objects; it is about the interface between body and matter—matter seen Piagetianly; that is, as we accommodate it to our ends (instrumentalization), and, following a Vygotskian thread, matter as it affects us cognitively (instrumentation). Thus, in Shao et al.’s paper we see how the teacher “was instrumented [affected] by the textbook” but also how he “instrumentalised the textbook”; that is, how he accommodates the book to his thinking and needs.

Translating the DAD as a cultural encounter

In the human sciences, a theory is a complex cultural artefact that intends to explain something while at the same time bearing and conveying a specific outlook of reality. There is no exception when the something is mathematics education. The DAD, as any other Western educational theory, has been shaped by a series of conceptions about learning, knowing, knowledge, the teacher, the student, etc. Its main concepts arose in specific historical conditions and have been refined, modified, and adjusted, as new circumstances have required. This is why the DAD, as any other theory, cannot be neutral. It makes assumptions about the very fabric of the educational world. In other terms, the DAD and any other educational theory is unavoidably ideological (it unavoidably conveys a specific cultural system of ideas). Thus, drawing on its assumptions, the DAD sees things as occurring in certain ways: George, the teacher, is instrumented by cultural objects; he acts following some Piagetian schemas, etc.

The fact that theories are ideological invites us to consider translation as a delicate process. For one thing, it would be perilous to consider translation as ideologically free.

To do so would amount to adhere to the view that the earth's various cultural forms of life are in the end all the same—even worse that they are the same as *ours*, which is nothing less than adopting an ethnocentric view of humans and, in the case of educational theories, of how humans learn.

It is precisely the dissonances between various forms of life that surface in the process of translation. Confronted by these dissonances, Shao et al. remark that “Even if we can properly express [a DAD's concept-word, e.g., ‘resource’] in a target language, the [concept word] . . . may not exist in the corresponding educational context.” The same remark is made in Knipping et al.'s and Wang et al.'s papers. The target language, indeed, responds and co-responds to an altogether different cultural view with its own history and its own political, economic, and social conceptions of the school and learning. The conceptual Kantian schema and the material resources the DAD brings to the fore are foreigners to the Asian cultural views where translation tries to find its niche. The DAD's concepts of schema, resource, language, etc. are part of an ideological apparatus of the Western world through which such a world intended to respond to its own culturally situated needs. There were, in particular, the need to shape a new Western conception of the modern subject (Radford, 2021), the need for a rationality understood instrumentally (Bohy-Bunel, 2022), and the need to come to grips with the question of materiality in face of the Western world's understanding of progress as a technological event (Radford, 2004). These three needs find an answer in the Kant-Piaget-Vergnaud lineage of ideas as challenged by the conception of matter of late modernity.

We see hence that a great deal of the difficulties of the process of translation rests on translating a cultural form of life into a different one. These difficulties do not prevent one from translating one cultural theory into the language of another culture. The problem is not (or not only) a question of language. The problem is to find one's way into the practice of what I want to term a post-colonial, culturally responsible translating practice; that is, one that emphasizes the aesthetics of cultural pluralism; one that places the translated ideas in the web of metaphors and cultural significations of the target culture; one which, for example, makes room to understand the Chinese textbook not as a mere technical tool but as an artefact imbued with the meanings of its own culture and ways of conceiving of the teacher and teaching and learning (see Shao et al.). A post-colonial, responsible translating practice should also be one that is not unidirectional, but *dialogical*. Shao et al. contend that the impossible matching of the DAD terms in the language of the target culture “open[s] up a perspective for contrasting teachers' interactions with resources in the crossing educational contexts and cultures.” They go on to say, “We can draw inspiration from the educational, cultural, theoretical traditions in other cultural spheres to enrich the connotation of the theoretical concepts.” Whose concepts? DAD's? What about the other cultures and their indigenous ways of conceiving of learning, knowledge, the teacher, and the student? What about their *influence* on the DAD's theoretical assumptions? How do

the indigenous philosophers and educators challenge Kant, Piaget, Vergnaud, and all those that inform the DAD?

RF-Q2 points to a profound problem that is always present in the encounter of cultures, namely, that the theories to which we resort in our work are carriers of historically produced ideological stances. These stances surface when we encounter the Other. Taking into account these ideological stances, it seems to me, is a prerequisite to the practice of genuine translating. RF-Q2 moves us beyond the possibilities of language and brings us into the domain of culture, power, and ethics.