Part II
Case Study 1: Pivotal Moments in Origami Fractions

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In this section, learning fractions in a 6th grade Japanese classroom provides the focus for three analytical approaches, each identifying moments within the interaction that were "pivotal," in a specific way, depending on the researcher's approach. The data consists of an English-subtitled video in Japanese of six students folding origami paper and of one teacher monitoring their progress on the blackboard, an accompanying transcription of their talk and gestures as well as detailed explanations of how papers were folded by each child. As a consequence of our multivocal approach, all three analysts revisited their methods and modified them in light of discussion with the others.

Shirouzu introduces the fractions dataset in Chap. 4, entitled "Learning Fractions through Folding in an Elementary Face-to-Face Classroom," a dataset he collected while visiting and teaching students twice in a remote area in Japan. In his chapter, he clarifies the rationale behind his data selection, the design principles of the class he taught, and the learning task he presented to the students as well as its objectives.

In Chap. 5, entitled "Focus-Based Constructive Interaction," Shirouzu presents an analysis of his own dataset. His goal is to understand where the personal foci of learners originate, what happens in the interaction once a learner focuses on, for example, shapes or production methods, and how learner outcomes are related to such foci. He also shows how foci and roles students take on (i.e., active task-doer or reflective task monitor) provoke different interpretations of the objects and events discussed during the interaction between the children. Pivotal moments center on how foci emerge or are mobilized in the interaction.

Next, Trausan-Matu presents his analysis in Chap. 6, entitled "Collaborative and Differential Utterances, Pivotal Moments, and Polyphony." He identifies the semantic content of "voices" and their inter-animation patterns beginning from a polyphony framework that he extends to include gestures in the analysis. He considers several dimensions: spoken dialogue, body language, the visual dimension, internal dialogue (at an intra-mental level), and echoes. Here, pivotal moments center on collaborative and/or differential utterances.

The third analyst, Chiu gives us Chap. 7, entitled "Social Metacognition, Micro-creativity and Justifications: Statistical Discourse Analysis of a Mathematics Classroom Conversation." He applies statistical discourse analysis to the dataset in order to see whether recent sequences of utterances affected the likelihood of creating utterances categorized as new ideas, correct ideas, micro-creativity or justifications. Pivotal moments pinpoint where one description of activity changes to another.

Lund wraps up Sect. 2 with her chapter called "A Multivocal Analysis of Pivotal Moments for Learning Fractions in a 6th Grade Classroom in Japan" by comparing the pivotal moments each analyst described using the five methodological dimensions discussed in Chap. 2: theoretical assumptions, purpose of analysis, unit of analysis/unit of interaction, data representations, and manipulation of data representations. She shows how redefining the unit of analysis and the unit of interaction in light of other researchers' analyses, interpreting other researchers' pivotal moments in one's own framework, and comparing the semantics of and the relations between analytical concepts all contribute to helping an analyst surpass the limits of a particular method.