Book Review of Eric Vandendriessche’s (2015), String figures as Mathematics? An anthropological approach to string figure-making in oral tradition societies

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As a child I recall playing with a loop of string making figures, challenging my sibling and other children from the neighborhood to copy what I was doing. Of course others offered the challenge for me to copy their string outcomes. Many years later while working on “Adapting Yup’ik Elders Knowledge” directed by Dr. Jerry Lipka, I was offered a lesson in observation by an Elder and asked to repeat what he had done with a loop of string. As I stood holding a coffee cup, the Elder manipulated his loop of string in such a way that the outcome was for the handle of the coffee cup to be within the loop. I looked on with astonishment as the Elder smiled. Through the translator I was asked to remove the string without breaking the loop, of course I could not. Smiling, the Elder removed the string with what appeared to me with as much “magic” as he had placed the handle within the loop. The Elder then handed the string loop over and asked that I show how to enclose the cup handle within the loop, I failed.

Eric Vandendriessche takes readers on a wonderful journey exploring string figures. Vandendriessche holds a Ph.D. in history and philosophy of sciences from Paris Diderot University. Dr. Vandendriessche’s ethnomathematics research extensively, approaching exhaustively, explores the historical and current string figure engagement of peoples from around the globe. When D’Ambrosio (1985) offered up his definition of ethnomathematics, he included “codes and jargons.” The codes and jargon that Vandendriessche brings to our attention, both from the past and his creations, reveals an original scholarship to an area that early mathematics explored as a “recreation.” Vandendriessche reveals that the mathematician Ian Stewart (1997) “claims that the description and mathematical characterization of string figure-making is still an open issue and could be a challenge to contemporary mathematicians” (cited in Vandendriessche, 2015, p. 5). Engaging a mathematical lens in 1911, Walter Ball is credited as the first mathematician to shown an interest in string figures (Vandendriessche, p. 67).

According to Vandendriessche: “The following question will be central throughout this volume: How is an activity recognized as “mathematical” when it is not identified as such by those who practice it? What criteria should we use” (p. 3)? Citing the work of Ascher (1991), (an “inspiration” for Vandendriessche’s scholarship): “To avoid being constrained by Western connotations of the word “mathematics”, inherited from various definitions of what mathematics is, and mainly based on Western experiences of historians and philosophers of mathematics, Ascher introduced the concept of “mathematical ideas.” She defined as a mathematical idea “involving numbers, logic or spatial configurations, and even more significant, combinations or organization of these into systems or structures” (Ascher, 1991, p. 3, cited in Vandendriessche 2015, p. 3). According to Vandendriessche (2015) “An activity is then considered as relating to mathematics when it contains such ideas or deals with
them…The issue of recognizing an activity as mathematical will be addressed in this volume through the analysis of the procedural activity of “string figure-making” (p. 4).

String figure-making has crossed many disciplines, beginning with the Zoologist, Alfred Cort Haddon in 1888. Anthropologists, mathematicians, philosophers, and others have examined this global phenomenon. Vandendriessche’s examination of string figure-making is serious scholarship that explores many important questions and opens many new questions for scholars across disciplines.

Vandendriessche exploration and continuation of Storer’s “heart sequence” creates new knowledge in understanding algorithms. Storer was a mathematician, once of the first Native Americans to earn a doctorate in mathematics, is credited for creating a “formal language, called “Calculus for string figures” (p. 113). Acknowledging the historical evidence, Vandendriessche remarks:

We have seen that the activity of creating new string figure procedures can be regarded as mathematical at different levels. Their production requires an intellectual task of selecting the elementary operations and organizing them is procedures. There is not doubt that this work has consisted in identifying ordered sets of elementary operations – the sub-procedures – having a noticeable impact on different substrata (configurations of the string). String figures thus appear as the result of genuine algorithm. (p. 67)

Many questions emerge from Vandendriessche’s scholarship, questions that are interdisciplinary in nature that are inclusive of ethnolinguistics, philosophy, pedagogy, cognition, mathematics history, etc. Vandendriessche, using an existing nomenclature has developed a standard inclusive of sub procedures to examine the rich algorithms of string figure-making. His text offers a remarkable step-by-step guide through photography of the details of string figures. He offers unique explorations, such as kinship, of how string figures may be “related” to different geographical regions.

Vandendriessche important scholarship reveals insights into stories associated with string figures, spirituality, and learning within groups and communities. This volume is important knowledge across many disciplines. As mentioned above, Vandendriessche poses many disciplinary questions throughout the text, questions that include possible strategies to explore “answers.” Vandendriessche has provided a wonderful body of original research for the academy. This reviewer looks forward to Vandendriessche’s future publications on the topic.
References

