Ephemeral Mathematics

Amy Ackerberg-Hastings (*MAA Convergence*)

For historians, the phrase in the title is not so much about the philosophical possibility that some theorems or fields might pass away as about a category of primary source that was designed to be temporary. Types of ephemera include advertisements, posters, pamphlets, speeches, cards, instruction manuals, event tickets and programs, calendars, and paper games or toys. While it is natural to think first of monographs, journal articles, textbooks, and correspondence when one is looking for historical documentation of mathematical developments — and maybe second to consult objects such as mathematical instruments, which have previously been discussed in the "CSHPM Notes" column [1; 3] — ephemera can also provide insights into the past of mathematics, perhaps particularly with respect to its culture, professional practice, and educational history. Additionally, ephemera are typically colorful and inviting, making them an appealing addition to classroom teaching.

Ephemera are often a blend of text, image, and object, so historians similarly use a blend of techniques for analyzing them as primary-source evidence. First, of course, they try to determine who made the item, when, where, for whom, and for what purpose. Then they visually "read" any drawings or photographs, taking note of each component of an image — who are the people? where were they? what other elements are used to communicate a message? — in order to deduce what the creators intended the illustrations to convey and what readers thought the pictures meant. Historians further seek to put these items into historical context by comparing them to other ephemera as well as to other forms of primary sources.
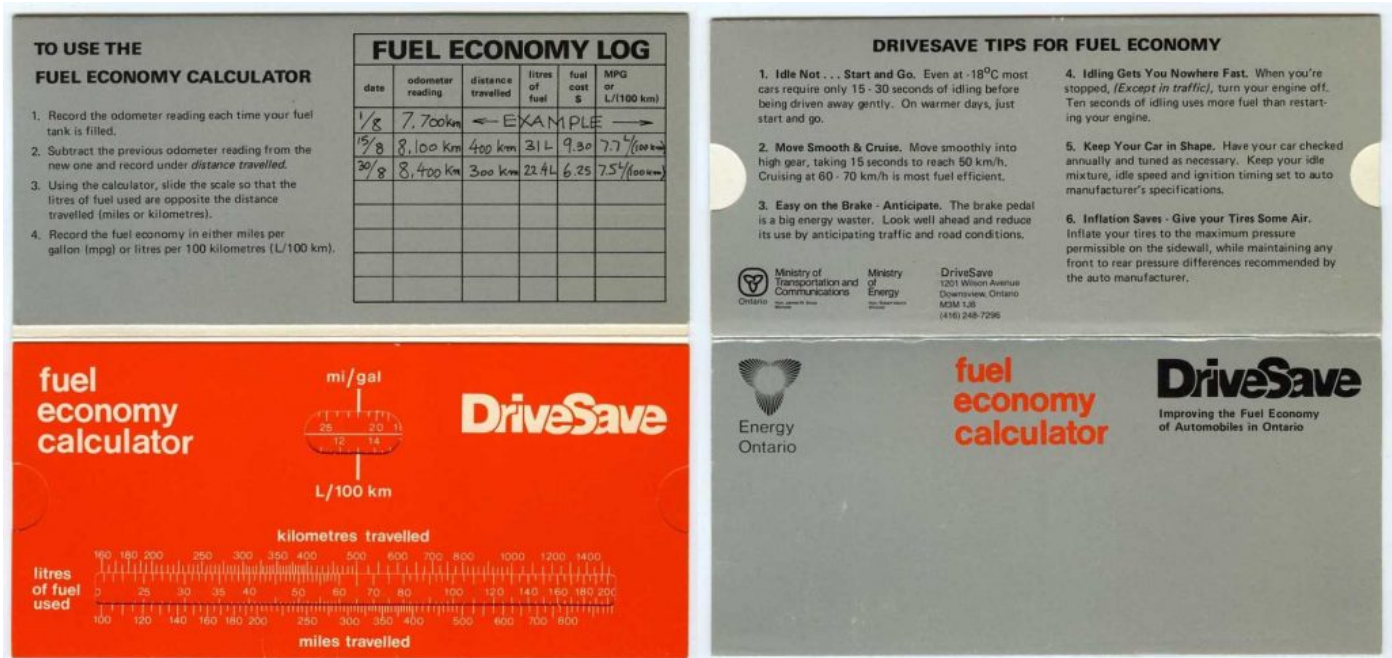

Figure 1. DriveSave Fuel Economy Calculator (unfolded), Ontario Ministry of Transportation, 1982. National Museum of American History (NMAH), Smithsonian Institution, neg. nos. AHB2009q09107 and AHB2009q09108.

For instance, this paper slide rule was issued in 1982 by DriveSave, a joint initiative of Ontario's Ministry of Transportation and Communication and Ministry of Energy that promoted fuel economy from 1981 to about 1994. Consumers were supposed to adjust the lower scale until the number of litres of fuel used lined up with the distance traveled. They were then to read the fuel economy from the upper scale and write the result on the provided log. Helpful tips for increasing the efficiency of one's automobile appeared on the back of the rule. Although a similar calculator was distributed to truck drivers, this promotional item was produced for only two years [4,

1982, p. 141, 1983, p. 194, 1984, pp. 169–170]. The mathematics may not be very interesting, since the slide rule is based on a simple linear relationship, but this bit of ephemera tells us something about government outreach efforts as well as assumptions about popular numeracy.

The Fuel Economy Calculator happens to be one of the slide rules I catalogued at the Smithsonian's National Museum of American History several years ago, but historical mathematical ephemera may be found outside of museums. The authors of books and articles on the history of mathematics sometimes use ephemera as illustrations. Depending on how often readers clean their own offices, old conference programs or examination papers may already be lying around. When it is possible to return to departments, check file cabinets for flyers from previous events or materials prepared in support of program or university initiatives. Similarly, institutional libraries and archives sometimes collect and preserve ephemera. It is never too late to start a collection of memorabilia, promotional items, or advertisements that make references to mathematics. And, like most other things, ephemera may turn up on the internet.
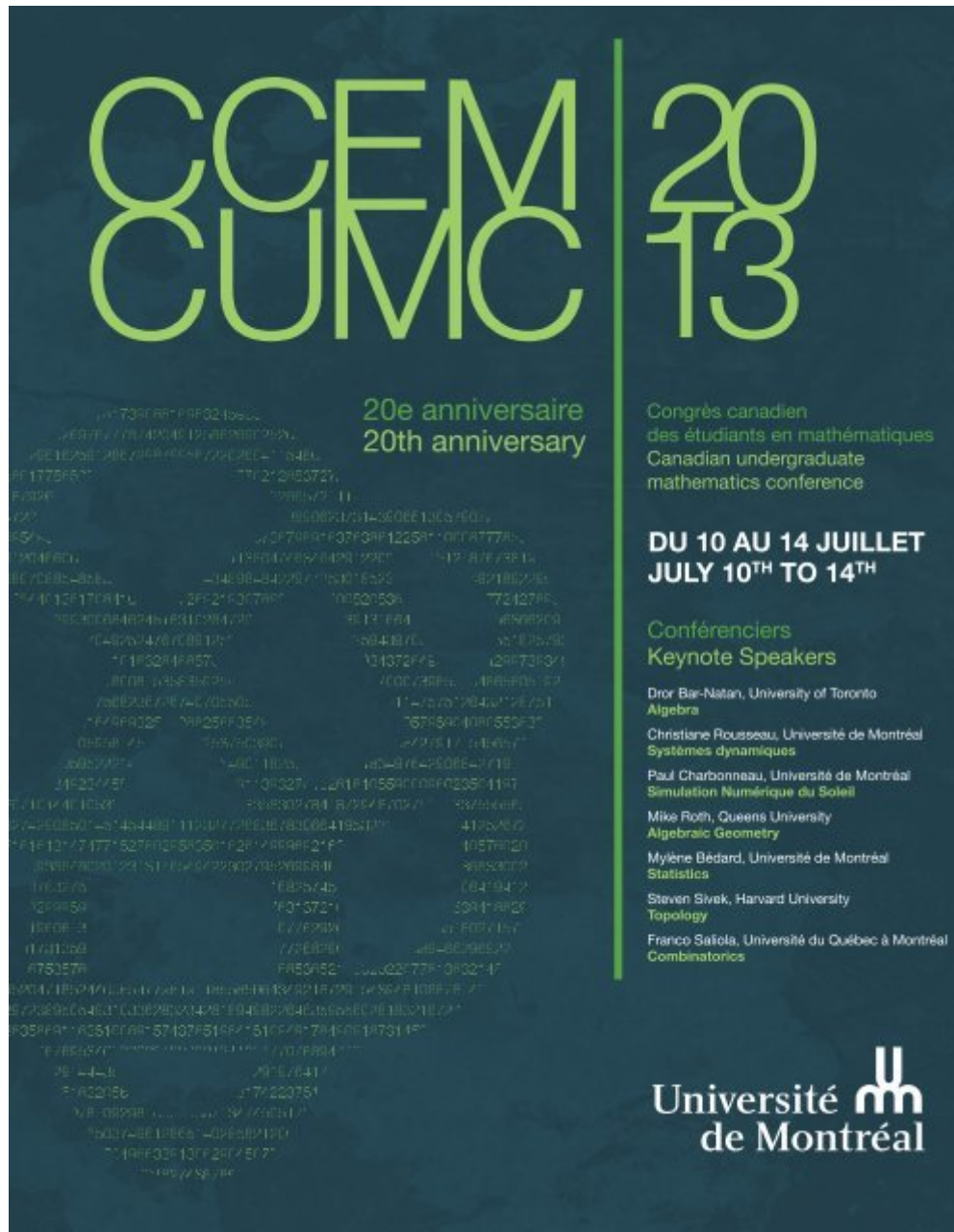
Figure 2. Meeting program, Canadian Undergraduate Mathematics Conference, 10–14 July 2013. Archived at Yumpu.com.

Indeed, within about an hour I filled up my browser with tabs marking possible illustrations for this column. For example, it turned out that CUMC organizers have digitized and uploaded several previous program booklets, including the one marking the conference's 20th anniversary. A researcher examining its pages could note the overall structure of the meeting, areas of research preferred by the graduate students of 2013, and the ways in which environmental concerns shaped the logistics of the conference.

Figure 3. Canadian Mathematical Society, "Women in Mathematics: The CMS Krieger-Nelson Prize," 2000. *Math Central*, University of Regina and PIMS.

This 20-year-old poster depicts the winners of the Krieger-Nelson Prize from 1995 to 2000. While ephemera like this are produced to inspire students at the time of printing, these items might also be employed to instruct later generations. Students could update the biographies of these mathematicians, compare their fields of interest to those of scholars who have become prominent more recently, or research potential choices for a poster of women mathematicians at a different time in history.

The suggestions outlined here are developed in more depth in [2], which also contains sample worksheets for primary-source analysis. My main hope, though, is that readers will be motivated to seek out and think about the various types of potential primary sources that surround them every day.

Amy Ackerberg-Hastings co-edits "CSHPM Notes" with Hardy Grant, co-edits MAA Convergence with Janet Barnett, and researches the histories of mathematics education,

mathematical instruments, and women in science and mathematics. She developed and taught courses in historical methods and historical writing for University of Maryland Global Campus, where she mentored over 200 undergraduate history majors, and she has been active in the US National History Day program for 21 years.

References

[1] Ackerberg-Hastings, A. (2015, March–April) Online Collections of Mathematical Objects. *CMS Notes* 47, 18–19.

[2] Ackerberg-Hastings, A. (2019) Teaching Mathematics with Ephemera: John Playfair's Course Outline for Practical Mathematics. *MAA Convergence* 16.

[3] Nickerson, S. (2016, September) How Objects Reveal Mathematical Culture. *CMS Notes* 48, 18–19.

[4] Ministry of Government Services. (1982–1995) *Ontario Government Publications Annual Catalogues* 1981–1994. Toronto.