Chapter Three - Methods for Reading Newspapers

The decision as to which newspapers to examine followed a prior trajectory. The original project from which this dissertation project stems examined Franklin's *Pennsylvania Gazette* for the years 1728 to 1765.[32] For this project, I wanted to see how that paper might fare as a communicator of science in comparison to a competing paper, in this case Bradford's *American Weekly Mercury*. I also wanted to compare a newspaper of America's most economically advanced city, Philadelphia, with smaller cities. In order to limit the scope of the project I chose a rough geographic area of the mid-Atlantic area and selected, because of ease of access to the resources, the *Virginia Gazette* of Williamsburg and the Maryland *Gazette* of Annapolis.

These selections represent fairly similar but still different socio-economic areas. Virginia, almost uniformly Protestant and concerned largely with the tobacco trade started its first newspaper in 1736, eight years into our examination range. Maryland, populated by many Catholics and also interested in tobacco and general trade, started its first newspaper in 1729 but could not support it for many of the subsequent years. Philadelphia, at more than 100,000 people by 1765, had the largest urban population in the colonies. It had also grown the fastest, having less than a third of that number in 1730.[33] Philadelphia's Quakers were fairly tolerant of other religions and so of all the colonial cities (excepting New York) it had the most diverse population in terms of ethnicity and religious affiliation. It also engaged in the most trade and manufacturing in our period.

The selection of the general time period and the location of colonial America goes back to a passage by Kronick.[34] He stated: "Use of the general periodical press for scientific communication may have been more necessary in the colonies where outlets were even more

[32] The reader should keep one other thing in mind regarding dates. All of the newspapers in this study converted from the older date format to the newer sometime during the eighteenth century although not at the same time. Earlier in the century, some actually listed both years (e.g. January 1, 1729-1730 for the modern year 1730) until after Easter where they listed the new year (e.g. May 5, 1730 for the modern year 1730). I used the modern date format changing the year on January 1st (e.g. I would use January 1, 1730 for the Year of Our Lord January 1, 1729-1730). This follows the format used on most microfilms.

[33] Brook Hindle estimates that approximately one million people of European descent living in the American colonies at that time. See Hindle (1956).

limited than they were in England. Therefore, Benjamin Franklin's essay on the cause of earthquakes, which is regarded as one of his earliest scientific writings, was printed in his own *Pennsylvania Gazette* on December 8-15 and 15-22, 1737." Kronick cited Aldridge (1950) for part of this paragraph. Upon reading Aldridge, however, I realized that his point was that Franklin had just reprinted Chambers' encyclopedia. Aldridge states that the earthquake essay is "a word by word transcript from the article 'Earthquakes'" in Ephraim Chambers' *Cyclopaedia: or, an Universal Dictionary of Arts and Sciences* although in an inverted order starting in the middle and publishing the beginning in the subsequent issue (12/14/1737). And further, five weeks later, William Parks of the *Virginia Gazette* reprinted the Franklin article without indicating the source. "We know that Parks took his material from Franklin instead of directly from *Chambers* because he followed Franklin's inverted order instead of the order of the original"[35]. Were Kronick's instincts still correct despite his own evidence suggesting otherwise? This question sparked my quest to discover just how much original material related to science the newspaper held and, when realizing their paucity, to discover what purpose the non-original reprints of scientific articles served.

I chose the years 1728 to 1765 as my period of inquiry for a number of reasons. Initially, the decision to cover these specific years centered around the CD-ROM for the *Pennsylvania Gazette* only covering up to the year 1765. However, another reason for examining this period soon became apparent. The time period appears critical in the development of the general periodical and yet, in comparison to revolutionary and 19th-century newspaper analysis, seems relatively underserved. Most treatments of the colonial newspaper spend their energies in examining issues of the freedom of the press.[36] Yet, the evidence suggests that the newspaper became much more of a consumer item driven by advertising revenue during this period. Each paper also offered a location for a number of political perspectives that the previous century's newspapers, and the newspaper of the late eighteenth-century federalist period, did not.

The end of the French and Indian war that the British claimed victory for in 1763 brought on a new relationship between Britain and the Americans and changed the orientation of the

[34] Kronick (1976).
[35] Aldridge (1950), pp. 162,163.
[36] Copeland. See Introduction.

newspaper in the process. The colonies, especially New York City, which had benefited greatly from the up to 24,000 British troops stationed there during the conflict, experienced an economic downturn. Britain, in the meantime, had decided to tax the colonists and recoup some wartime losses. Britain felt justified in this as the conclusion of the war had essentially secured the Western border of the colonies and set the stage for continental manifest destiny.

Unfortunately, many of the colonists viewed the 1765 Stamp Act, a tax on 49 types of printed material from contracts to playing cards and including periodicals, as particularly egregious. Except for those financially weak printers who felt vulnerable or hoped to cash in during the fray, most printers presented a negative, sometimes quite vociferously negative viewpoint: running biting commentary and even stopping publication. In actuality, Parliament repealed the Stamp Act only months later. But the strains became more manifest. Starting with this period many of the colonial general periodicals began to appear less 'objective' and more partisan up through the revolution and the federalist period.

We can see the political fallout in individuals running the newspapers as well. For example, the longstanding partnership between Franklin and David Hall as editor of the Pennsylvania Gazette came to an end after 18 years in 1766 when Hall joined a different political party.[37] Before this the middle years of the eighteenth century had seen many newspapers as fairly receptive to different viewpoints. According to one author, this period also saw a dropping off of naturalist inquires in lieu of political pursuits.[38]

In order to put these newspapers in the general context of other colonies' newspapers, I've utilized whatever secondary research exists that similarly examines the contents. Several works address some of the issues. David A. Copeland has a chapter on medicine and smallpox in all the colonial papers of the period but gives little attention to natural philosophy or natural history. Judith Ward-Steinman Karst examines the medical content of newspapers focusing mostly on the

[37] Bridenbaugh (1965), p.74.

[38] Bridenbaugh (1965) in Rebels and Gentlemen, p.69. According to Bridenbaugh, the men of science dropped their naturalist inquires to pick up political philosophy and homeland defense during a critical time. He notes that David Rittenhouse, v. pres., declared "that the schools be broke up, and the inhabitants engaged solely in providing for the defense of this city." The inhabitants of colonial Philadelphia wore many hats of necessity. However, as we shall see, even in wartime, natural philosophy could be a source of patriotic cultural identity.

south. Donald A. Duhadaway looks at medicine strictly within Philadelphia and Mexico City. Most examinations of science in America address newspapers incidentally.

To examine the four newspapers I've used several techniques and sources, all of which have certain limitations. To overcome these limitations I've often corroborated information between approaches. Since the number of articles expressly concerning natural philosophy was small for the entire period in comparison to all other subjects, I hesitated in using a sampling method. However, I eventually succumbed in several cases where I felt confident.

For the *Pennsylvania Gazette* I had the opportunity to use a CD ROM product for the years 1728 to 1765 that allowed me to use pre-created directories on science and medicine. I also created an extensive keyword search list that allowed me to verify and augment the collection. Unfortunately, the CD ROM product did not include many articles from overseas and seemed inconsistent occasionally with what it did present, so I also ended up choosing a number of years (1728, 1729, 1730, 1735, 1740, 1745, 1750, 1752, 1753, 1754, 1760, 1765) and reading the entire contents from microfilm. The years represent a distribution over the time period as well as some critical years such as '28 and '29 when the paper began and then got taken over by Franklin and '52 – '54 when Franklin conducted and published his experiments on electricity.

The *Virginia Gazette* had an index so I used a variation on the keyword list used on the *Pennsylvania Gazette*, also adding words as I went along.[39] From this I created a date and page/column index into the journals removing the numerous repeats occasioned by the cross-indexing. I then read the entire period available, from 1736 to 1765, on microfilm, verifying the index and adding the considerable amount it missed. A number of the years, 1751 -1763 were also verified and added to separately by a fellow graduate student. From this I determined that the variance between his and my own selections hovered around six percent. I deemed this acceptable, especially given the broad search parameters.

For the *Maryland Gazette* an index starting in 1729 existed but the index only covered articles related to people and events in Annapolis. I then surveyed all the issues starting with the first

[39] See Cappon & Duff.

available by microfilm in 1745 to 1758. In the interests of saving time for data analysis, I then picked two years spread out equally among the remaining seven years, 1761 and 1764, to represent the remaining seven.

For the *American Weekly Mercury* I actually started slightly before our period in 1727 to get a sense for how Bradford viewed the coming competition of Keimer and the *Pennsylvania Gazette.* I then read all the issues extant up to 1746 when that long running newspaper stopped publication.

To further verify that my selection of articles remained consistent and comprehensive I selected twenty issues, five each of the four papers, at random and re-read as from scratch. Of the eighty-seven articles found on the second run, I discovered four that I had not seen the first time – all small one to two line notes on weather. This gives me a 4.6% variance between the two runs in terms of number of articles in the sample. While I had hoped for a 0% variance, again, this seemed acceptable given the relative size and importance of the discovered articles.

I selected all articles from the newspapers that looked interesting from several perspectives. To begin, I looked in terms of Arts & Sciences generally and the general categories of Natural Philosophy (astronomy, electricity, air), Natural History (plants, animals, earth, weather, pre-civilized man), Health (surgery, treating small pox, patent medicines, chemical and galenical remedies) and Mechanics and Techniques (mechanical innovations, manufacturing). Of course, these sub-categories, while existing to an extent at the time, obviously do not stay easily within these major categories.[40] For instance, a number of scholars theorized that earthquakes, for example, and weather (especially lightning and, thus, electricity) acted in concert.[41] Mechanical innovations could improve the science of astronomy as another example. Articles also easily leapt between categories by, for instance, noting the practical aspects of a particular discovery. So, as a result, I qualify at the outset any quantitative results using these classifications from the collected data.

[40] The first broadsheet advertising Keimer's Pennsylvania Gazette lists many of these categories as the intended subject matter for the new paper.
[41] See Aldridge (1950).

I wanted to go further than the obvious articles explicitly giving advice on how to grow crops, information on an upcoming eclipse, or that mention established members of the republic of letters or Virtuosi[42]. Therefore, I noted all contested areas of understanding: articles of superstition, witchcraft, folk-wisdom, and religious opposition. I took account of articles that spoke to issues normally outside the range of natural philosophy where the metaphors of the burgeoning disciplinary fields or enlightenment thinking slipped in. I noted the articles that expressly spoke of the value of natural inquiry and mathematics when the topic might involve strictly economics. I noted the use of new and older technologies in articles and ads, the accident reports that implied a desire for better design or better operation when accidents occurred, and articles reflecting the prescient technological optimism and public wonder with mechanical devices.

I paid close attention to the advertisements. Here I found scientific books for sale in conjunction with supporting articles. I found the patent medicines, surgeons, surgical tools, apothecaries, druggists, and, even, general shopkeepers stocking medical commodities. I noted the craftsmen and the objects of their skill: wire, rope, wood, steel, watches, clocks, canvas, stone, paper, ink, and powdered wigs. Improvements in transportation such as ferries made the list. The list also included the instructors of mathematics, navigation, and other basic skills and the itinerant lecturers of electricity, the air pump, or medicine.

To distinguish advertisements (a term created in Britain in the previous century) from articles, I adopted the "Wallace Criteria" used by Barrow in his examination of colonial advertisements. These criteria are: (1) items in the advertising columns, whether or not they are headed by the word "Advertisements"; (2) items offering something for sale; (3) public notices in the advertising columns; (4) others -- letters, news items, etc. -- which were obviously paid notices.[43]

My conclusions on the value of advertisements in the colonial American newspaper come, to an extent, from some secondary literature. However, since no work detailed the amount of

[42] Daryll Maclean Anderson uses the phrase often used by science satirists of the 17th and 18th century to categorize natural philosophers or those doing science. The term “scientist” did not come into being until the 19th century with Whewell.

advertisements over the whole period, I wanted to verify the increase in advertisements both in number and as a percentage of the paper. I did this in three ways. One, I simply calculated the percentage of page space for advertisements for each paper in given years and came up with averages for those years. Since newsprint was potentially expensive, this seemed a reasonable approach.[44] Instead of counting column inches per se, I would look at the page as a whole and say estimate the percentage of the issue devoted to advertisements in whole pages and fractions of a page to 1/16th of a page. For example, a 4 page issue might have approximately 1 and 5/16 pages devoted to adverts. This avoided the problem of changing numbers of columns and font sizes. In addition, I took samples of those issues and counted the number of advertisements on a page and created an average number of advertisements per page for each paper. Finally, when possible I counted the number of lines of text both for advertisements and for the issue. Unfortunately, colonial newspapers often switched fonts and number of columns in issues and the endeavor to keep track often became unwieldy.[45]

While the main thrust of this dissertation remains the examination of the content of the articles concerning natural knowledge and technology, I did, when appropriate, quantify the amount of information in other categories. Additionally, I occasionally compared the amount of certain types of articles or advertisements to the newspaper's total amount of text. Counting the lines of text and estimating the words per line for issues and for individual articles sometimes helped to get an idea as to how much space the paper gave an issue or to show how much more news of certain types the newspaper brought the reader over time.

The data analysis and selection of the types of articles and advertisements evolved during the reading of the newspapers and secondary literature. Other than the already stated parameters for examination, what both emerged from the collected data and caught my eye were:

1. Notices vs. substantial articles: the differences between articles about experiments and experimental process gives a better sense for the amount of text devoted to a topic. For

[43] Barrow (1967), p.vii, citing Wesley H. Wallace, "Advertising in Early North Carolina Newspapers, 1751-1778" (unpublished MA thesis, University of North Carolina at Chapel Hill, 1954).
[44] Copeland notes that newsprint was in constant short supply. Printers often placed advertisements asking for rags, p.17.

example, notices of Royal Society meetings or the announcement of a machine in England that turns "salt water sweet" versus more substantial articles that actually told the reader how to do the experiment or procedure[46]

2. Articles vs. advertisements: while the issues of copyright took their time in arriving, the separation between advertisement and article came across quite distinctly in the colonial paper. Of course, some advertisements found clever ways to appear 'scientific' such as the patent medicine advertisements.
3. Originals vs. Reprints: the frequent anonymity of authorship makes this particularly difficult. Many authors have spent their careers determining who wrote what. For example, DeArmond notes that only four of the approximately thirty-two BUSY BODY essays in the 1729 American Weekly Mercury came from the pen of Franklin.[47] The importance of this distinction is that it gives us a better idea as to how the newspaper facilitated publishing and disseminating information about original and domestic science.
4. Articles on Practice vs. Articles on Theory: the real strength in making this distinction becomes apparent when we realize that little theory found its way into the colonial American newspaper. It also points to the numerous areas – husbandry, navigation, fire prevention, war making, health and economic welfare – that philosophical praxis might benefit.
5. Articles that invite the public to participate in experiment.
6. The proximity of advertisements and articles on the same subject or by the same individuals.

These approaches to the data further refined a characterization of the articles that explain or use natural phenomena. In most cases we see the use of science as a superior metaphysics of rationality and empiricism, a public/private/commercial utility, as entertainment, and as authority. We also see interesting exceptions where natural phenomena plays a different role, sometimes for a critique of natural philosophy. Although many of the articles exhibit more than one of these individual characteristics, I divide the dissertation along those lines and use the exceptions to contextualize the majority. I finally characterize what a public science in the colonial American newspaper means for public access to science.

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[45] Copeland also mentions this as a problem, p.285.
[46] Kronick (1976) also makes this distinction.
[47] DeArmond, footnote 42 on page 16.