

Appendix A

Blacksmiths and Final Products in the Bateman-Weiss Manufacturing Samples

As indicated in the text, enumerators at the censuses of manufactures in 1850, 1860 and 1870 were instructed to list up to six raw materials used in the production of up to four individually identified final products. Specifically, the instructions stipulated that:

“Under the general heading, entitled "*Annual products*" is to be inserted the *quantity, kind, and value* of *each* produced during the whole year. It will require great care to fill this column properly. When several articles are manufactured, the first four only need be particularly specified, and the remainder classed under a general heading of "Other articles," and the aggregate value of such articles carried out, the quantity being omitted; or, where otherwise impracticable in any case, the aggregate value, without the specific quantity or kind. In stating the value of the products, the value of the articles *at the place of manufacture* is to be given, exclusive of the cost of transportation to any market.” [emphasis in original] (Wright, 1900, p. 314)

The Bateman-Weiss coding scheme kept the spirit of these instructions within the space constraints imposed by an 80-column Hollerith punchcard. To achieve this, they reduced the number of individually identified raw materials and final products to a maximum of the four most important (by value). In those cases where more than four inputs or outputs were identified, only the three most important by value were identified by specific codes and the value of the remaining inputs or outputs were aggregated, reporting that value under a code for “Miscellaneous.”

Collectively, the products made by the blacksmiths in the individual Bateman-Weiss state samples were classified under 83 different final product codes, 82 of which were unique (in the sense of different descriptions or units of measurement – including none). The duplicate code is for “miscellaneous.”¹ In analyzing the activities of blacksmiths, we grouped these 83 final

¹ Almost fifty years has passed since collection of these data began and it has been about 45 years since Atack did any product coding on them. No one remembers what the distinction was

products (disregarding the units of measurement) into six broad groups (some of which represent judgment calls about what was meant by the product description).² Specifically:

“General blacksmithing work”: Blacksmithing, custom work, horseshoes, jobbing, joiner work (presumably welding, etc.), miscellaneous, (horse)shoeing/shoeing etc./shoes, and stove fitting.

“Hardware”: Copper, harnesses (presumably fittings thereof like bits, buckles, hame clips and rosettes), hinges, iron cast, ironware, locks, locks etc., millwork, nails, screws, shipwrighting (presumably fittings like oarlocks), spikes, springs, tableware, tinware, and wagon irons.

“Implements”: agricultural implements, axes, corn planters, cradles, cultivators, edge tools etc., farm/plantation, hoes, machinery, mining, planers, plows, reapers, scythes, steel work, threshing machines, tools, and wheat drills.

“Iron work”: iron railings/rails, iron/ironwork, and wrought iron.

between the two “miscellaneous” codes but they were assigned consecutively and very early in the project: 45 and 46. Initially, sequential numerical codes were assigned, began with “1.” After the 99th code had been assigned, subsequent codes were alphanumeric beginning with A0 (Azero) through A9, then B0 through B9, etc. as the coding sheets and punch cards allowed for only two characters for each code. Once the punchcard constraint vanished (in the late 1970s with the switchover to terminals and eventually personal computers), all codes were translated into 4-digit numerical codes as entering only numerical data was faster, more accurate, and more consistent than a mix of numbers and characters. Attack’s best guess for the initial distinction between the two “miscellaneous” codes is that “45” was used where the census enumerator had classified the product as “Other articles” (aka, miscellaneous) while “46” was used where Bateman and Weiss (and their student helpers) had done the aggregation but this distinction was lost at some point. Certainly, Attack only remembers using “46” for “miscellaneous” (or not specified).

² The following final product codes were used for establishments describing themselves as blacksmiths (SIC 769): 1, 7, 10, 11, 13, 16, 27, 28, 29, 32, 45, 46, 47, 52, 53, 54, 55, 57, 63, 64, 68, 74, 83, 94, 96, 124, 130, 152, 164, 165, 168, 191, 192, 199, 203, 228, 257, 310, 346, 350, 351, 358, 366, 367, 370, 422, 446, 519, 533, 537, 564, 611, 628, 629, 630, 640, 649, 650, 651, 655, 703, 789, 822, 829, 852, 854, 935, 982, 985, 991, 1040, 1079, 1105, 1109, 1148, 1161, 1215, 1233, 1246, 1265, 1292, 1297, and 1308.

“Repairs”: guns/rifles (almost certainly confined to repairing items such as trigger guard, sight, etc.), repair work, and wagonwork.

“Wagons and Carriages”: buggies, carriages, carts, coaches, wheel hubs, sleighs, wagons, wheels.