Grasping the anti-modern: training a naïve bayes classifier to expand a sub-corpus of Swiss newspaper articles (1939-1945) on anti-modern discourses

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In this short paper, we will demonstrate how we integrated a text classifier into a digital history workflow. The historical research relies on digitised newspapers (made available by the *impresso* project), and computer assistance (a naïve Bayes classifier) to select, classify and analyse sources, along the traditional close reading of the material. This classifier is applied to expand a corpus of articles containing anti-modern discourses in the Swiss press before 1945. Working with newspaper collections carries the challenge of the mass size. Thanks to the digitisation and given OCR and OLR, one can use the help of classifying algorithms to selection relevant articles in large collections, but also making implicit knowledge more apparent. The use of algorithms is combined with close reading of the sources to avoid the misinterpretation of the outcomes of the text classifier.

We want to discuss how a computer assisted classification becomes part of the historiographical heuristic. Our first objective is to expand the sub corpus of relevant articles, within a collection of digitised newspapers made available within the *impresso* project. Secondly, we want to make implicit knowledge more easily apparent with a list of distinctive keywords from newspaper articles expressing anti-modernism. Can the text classifier help with understanding the complex concept of 'anti-modernism'? Such concepts, characteristic for historical research, are often much easier to recognize for domain-experts, than they are defined with a simple set of keywords.

Especially since anti-modernism is defined as being the opposition or reluctance towards saillant elements identified with modernity, such as "progress", individualism, liberalism. Anti-modernism is therefore characterised by an "inherent ambiguity" (Antohi & Trencsenyi, 2018, p. 3). Anti-modernism is not bound to a topic or even a given person. Anti-modernism is however characterised by a set of values and styles, or figures, as defined by historian Antoine Compagnon: it has a distinctive tone, the vituperation, the pessimism, the obsession with the original sin that lead to the decadence of a given society. Anti-modernism had a strong attractivity for intellectuals in Switzerland in the first half of the 20th century (Mattioli, 1998, p. 39). We chose therefore to prepare a manually annotated sample of anti-modern articles to find more similar articles with the help of the text classifier, and to generate a list of distinctive words for anti-modern discourses.

For the classification, we used a supervised pattern classification algorithm, Naïve Bayes (NB), named after Bayes' theorem that formalises the probability of an event to occur, based on prior knowledge (Raschka, 2014). It relies on predefined categorisation to determine the probability of a new element, in our case, individual press articles, to belong to these categories. In the training stage, it is given two sets of articles, that have been manually annotated. Based on these two sets, the NB classifier helps in identifying patterns of words discriminating between the two series (as well as the words that are neutral, e.g. that are found in both series). The list of discriminating words are then

used to assess the probability of an unknown article, e.g. that has not been annotated, to belong to one or the other category, based on the words it contains and that overlap rather with the words that appear more often or exclusively in one of the two categories. We want to use the classifier to make patterns that were not identified prior to the annotation, more explicit. The list of discriminating words informs about the surrounding, less saillant words that define the expression of anti-modern discourse. Similarly to R. Busa's search for the concept of "presence" in Thomas Aquinas' work that lead him to look for the use of the particle "in" as indication of the searched concept (Busa, 1980). More modestly, we used the classifier to identify words that qualify the anti-modern discourse on Europe that have not been identified earlier as parts of commonly known keywords of that discourse.

How did we proceed? Based on a pilot study of a corpus of about 12 000 articles from two French language Swiss newspapers (Journal de Genève, Gazette de Lausanne), published between 1939 and 1945, we annotated 400 articles, 200 as carrying anti-modern discourse and 200 non-anti-modern. We then trained a Naïve Bayes classifier, in R, with uni-, bi-, and trigrams, to better capture slogans or persons names. We after applied the model to the rest of the 12 000 articles and the output was manually validated.

This methodological experiment aims at using the intermediary output of the classifier to assist the classical pattern search in historical research. The output of the classifier, being the probability scores for new, unknown articles, and a list of distinctive words for each class, helps in return collect new keywords, unexpected and promising, for further queries, in other newspapers and other time frames. The classifier helps to find more relevant articles, and to reflect on the distinctive features for the anti-modern. This opens the historian's "black box" by creating traces of the intermediary steps of the iterative refining of the research question, evolving with the confrontation with the source materials, and being here made explicit via the distinctive vocabulary. The text classifier seems a fitting tool for digital historical research - and corpus expansion.

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