Networks of Influence in the 1789 Declaration of the Rights of Man

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Introduction

The 1789 national assembly that gathered to frame a declaration of rights represented a broad swath of early modern French society. From soldiers to lawyers, from the established clergy to an increasingly vocal third estate, the debates represented a social reconfiguration in process as well as an intellectual exercise. How did the social position of individuals determine the form of their speech contributions? What broad patterns can we identify among known social groups, and what new factors seem to indicate previously undetected groups? Finally, what conclusions can we draw regarding the nature of a speech-event as a contribution to the final declaration?

The concept of a social network of influence provides us with an excellent starting point. In perceiving individuals and articles as types of "nodes," we suggest that by filling in the links between them, we might start to see an overarching structure of interaction. We therefore use the biographical data of the debate participants, in combination with the record of debate proceedings, to illuminate a possible network of social influence.

However, "influence" retains a vague determinism. In this case, we found it helpful to conceive of individuals as perhaps consciously motivated by content-related questions, but choosing argumentative strategies within a field limited by social factors. We are able to postulate several situations given our socio-historical knowledge of the context: take, for example, the case of the lower clergy, who we may reasonably predict would avoid speaking directly against a member of the upper clergy. We could reasonably expect to see clashes between the third estate and the nobility on questions of taxation, or the third estate and the clergy on questions of censorship. Perhaps the third estate might appear to be more widely disposed to framing their arguments in terms of inter-class disagreement. rather than intra-class solidarity, by comparison to the other estates.

Design Theory Methodology

We were influenced by the design theory of three authors in our methodology: Gui Bonsiepe, Lev Manovich and Howard Wainer.

From our initial goal of complicating the debates with the addition of biographical information, we hoped to simplify the approach to our data through visualization. As Bonsiepe describes, design should aim to "reduce cognitive complexity..[by focusing on]...the process of knowledge distribution." Our goal in presenting the information graphically was not to convey the sum of our data, but rather increase its accessibility, by emphasizing its overall form and relying upon the human ability to pattern-read.[1]

In "What is visualization?" Manovich poses two guiding principles for visualization - reductionism and spatial variables. He argues that graphical primitives and simple shapes can

[1] Gui Bonsiepe, "Design as Tool for Cognitive Metabolism" (Paper, Ricerca+Design, Politecnico di Milano, May 18, 2000), 12.

stand in for objects or relationships between them, and the latter can represent key differences in the data and pattern revelation. Representing a network of interaction in a legible aesthetic form required first, the prioritization of the information we found most crucial, and second, the use of a familiar, shared language of symbols. In using circles for our nodes, and lines for our interactions, we hoped to reduce interpretative friction. The weight and directionality of the lines also follow traditional graphical modes.[2]

Finally, we followed the Wainer's guideline that humans are sophisticated at seeing patterns, and therefore many questions can be answered by engaging with a visualisation. For this reason, we sought to present a limited argument by suggesting a relationship between a social factor (such as age, estate, etc.) and a pattern of interaction, but without elaborating beyond that.[3]

Design Process: Measuring the Scale of Articles (GGPlot)

Our first step of the design process was to determine first, what constituted an interaction, second, how we would represent it, and third, if we were interested in representing a relationship between the debates and drafts. The coarse measure of debate interactions to the relationship between the article drafts and the final output seemed a likely starting point. It was intended as a trial for both determining and visualising interactions in some form.

We first went through each individual *projets* and counted the literal references to each article. In some cases it was not explicitly stated that "Article 1," etc., were being referenced, though in all likelihood this was the case. It proved to be somewhat challenging to tease out interactions so we attempted a second approach.

We picked (not arbitrarily, but certainly subjectively) words or a series of words that appeared in each final article. The words are supposed to represent the general idea of the article. For example for Article 1 the words 'libres et egaux' were selected. Then the aggregated *projets* were searched for the number of occurrences of those words, in order to get a sense of their importance (at least in terms of frequency). Sometimes several words were used, sometimes a series of words. This approach only uses words in the precise form they are found in the final articles (for example 'droit' would not show up if the final word was 'droits') and no aggregation of verb conjugations was used.

The GGPlot package in the R software was used to create the visualization [fig 1]. The plot shows the frequency of words (or series of words) that are supposed to represent each respective article throughout the article proposals. Each article node is scaled by size and color, with the counts highlighted in the legend. The code used to create it is added in the appendix.

While this revealed some interesting areas of influence (i.e. the larger nodes), there are two primary flaws with this approach. First, as mentioned, we are only applying literal terms so if there are is a large amount of variance in the conjugation of certain words or terms, it does not pick this up. But second, and perhaps most importantly, we are imposing

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[2] Lev Manovich, "What Is Visualization?," *Visual Studies* 26, no. 1 (March 2011): 36–49.

[3] Howard Wainer, "Understanding Graphs and Tables," *Educational Researcher* 21, no. 1 (February 1992): 14–23.

clear subjective constraints on the data. While the words or series of words used are an attempt to convey the meaning of the article, this is the author's determination. It would be better to not apply these constraints and instead allow the data to be seen as a whole.

Design Process: Representing Biographies (Palladio)

As it became clear that we would need to impose some subjective constraints, but nonetheless wished to represent the most data we could, we refined our approach through discussion. First, we decided to consider the debates somewhat in isolation of the drafts, so as to refine an approach that could be broadened after the fact. Second, we opted to rely upon a reader's contextual discretion to sort interaction, due to the confusing nature of the debates document. The design of the debates events table was created to best encompass a qualitative reader's approach rather than a quantitative computerized approach. Finally we determined that the qualities such as impactful weight and directionality would better represent our concept of interactions rather than quantity of interaction alone.

While on the whole, Social Network Analysis (SNA) does not tend to distinguish between types of interaction, flattening all relationships to links, we did believe that it would be important to define at least three different forms of influence: positive, negative and neutral. The third category represents an admission of the difficulty of assigning a pure charge to most statements. If speaker B immediately follows speaker A, for example, we might reasonably presume that he is somewhat responding to A, even if he does not make an explicit reference. However given our interest in both the interaction between individuals and other participants, and the interaction between individuals and particular articles, we wished to preserve all speech-events for use in our visualizations.

We turned to Palladio first as a humanities design tool that would allow us to represent the relationship between activity and biographical detail. Palladio proved particularly useful for representing a geographical component, for example. Shown here is a simple map of overall debate activity as plotted by the region of the participant [fig. 2]. The "graph" function also presented one possibility for the relationship of individuals and articles. The use of filters also meant that we could limit our view to individuals belonging to a certain group, such as by age of estate. However we were dissatisfied by our inability to accomplish many of our priorities.

First, it was important to us to make the most effective use of color and position, as per the direction of design theory. Second, we wanted to suggest weight and directionality in our interactions, as well as distinguishing between positive and negative charges. Third, we wanted to represent multiple groups together in a more readily legible form than small multiples. We found that dividing the groups into separate images did not adequately convey interaction and influence *between* groups and well as within them. Fourth, we wished to represent interaction between individuals as well as between individuals and articles. Fifth and finally, it was important that the links of interaction, rather than the nodes, be the focus of our visualization. The use of color and position would prove crucial to this purpose.

Rough Sketches

Rather than looking at the scale of each article in terms of the contributing *projets* as we did above, we wanted to visualize the influence of speakers to each other and also the

influence of themselves to the articles during the debates and *projet* process. Achieving this goal requires presentation and modeling in a highly stylized way. We first attempted this by sketching the type of interaction we would like to see. These are broken down into two distinct types of interaction, individuals-to-articles and individuals-to-individuals.

Part 1: Individuals-to-Articles [fig. 3].

The left column represents individual speakers. They are split into three distinct groups, which could come to represent age, estate, etc. The right column represents the articles as they appeared in the final draft, in numeric order.

We wished to see if there were any visual themes that emerged from the data when individual speakers link to the articles. The visualization would ideally convey both the association of particular group, and particular individuals with articles through a density of lines.

At this point we considered several ordering schemes for the individuals, including interaction frequency. However we opted to use a random order instead within the group although the alternative might be more aesthetically pleasing. We were equally careful not to convey the impression of more information than we wished-- the use of colors, the placement of the nodes, and the overall vertical orientation of the visualizations all appeared to be the least “encoded” of several possibilities

Part 2: Speaker Interactions [fig. 4]

We can similarly visualize the interactions between speakers. To do this, we could order the individual speakers by interaction frequency. We could then use color and/or arrows to show positive/negative interactions to/from various individuals to get an idea of where the debates were clustered. We could also cluster the individuals into groups, again by age or estate to see if these clusters line up with the interactions. For example, did certain estates speak only amongst themselves, or were certain age groups more conversant?

Final Output

While we experimented with options in both R and Palladio, we eventually determined that doing the process by hand would allow for the most control over our final design. Keynote offered a simple interactive means of drawing interaction, using our completed debate events table for reference. The particular connecting line function meant that we could input the interactions once, and re-sort the individuals as we chose after that.

We present three models here, each using a slightly different approach using our basic rules. The first two [fig. 5 and 6] are a pairing of the individual-to-article and individual-to-individual graphs, as sorted by the the estate represented by the individual assembly member. In the first, the addition of color to both the individual and the interaction by this grouping allows for a viewer to immediately identify a volume of interaction, as associated with the group and article. On closer study, it is also possible to determine the particular interactions of an individual, and whether he fits in with a broader pattern. In the second, we chose to use a similar use of color, opting to represent a positive or negative charge by position on the left or right of the participants instead. This had the benefit of

matching the two models, as well as emphasizing the directionality of interaction when it crossed groupings.

The third model [fig. 7] represents the individual-to-article approach as sorted by the age of the participants at death. We intended to demonstrate the power of the vertical hierarchization, as well as the possible integration of historical knowledge into the model's use; in this case, the looming spectre of the French Revolution and its many casualties. The fourth model [fig. 8] uses age similarly, but instead represents age at the time of the debate using the individual-to-individual approach.

One of the most valuable elements of these models is their potential for comparison. Take, for example the two individual-to-individual representations: the quantity of "small jumps" in the model sorted by age suggests that proximity in age was a strong influencing factor in determining speech events, perhaps more so than a shared estate representation. Additionally, our models offer interactive possibilities. Beginning with a "messy" series of connections, and applying various control variables allows for continued experimentation. Rather than representing a traditional SNA model, which suggests but does not necessarily compare factors, we believe that our model functions as a research tool more in-keeping with the goals of a historical researcher.

Conclusion

While the visualization of a social network requires a somewhat paradoxical combination conceptual complication and visual reductionism, we believe that our model represents a promising research avenue for the Writing Rights project. Biographical information helps to recreate the negotiatory social space of the 1789 debates, while the patterns of interaction demonstrate that conceptual concerns alone did not drive the creation of the final bill.

Appendix

I. Images (See attached presentation)

Figure 1: GGPlot
Figure 2: Palladio Map
Figure 3: Individual-to-Individual Concept
Figure 4: Individual-to-Article Concept
Figure 5: Individual-to-Article by Estate Represented
Figure 6: Individual-to-Individual by Estate Represented
Figure 7: Individual-to-Article by Age at Death
Figure 8: Individual-to-Individual by Age at Debate

II. Tables (See attached tsvs)

III. Rules

Rules for Debate Events Table

Event: Unique generated value
Event Note: Note made by compilers of debate document, usually in format Article_#_Proposal_#_Amendment_#_Opposing/Supporting/_(APPROVED)
Article: Text label of article category for debate
Speaker: Surname of speaker
Pro Individual: Recipient of speaker's support by surname
Neg Individual: Recipient of speaker's critique by surname
Neutral/Other Individual: Relationship established by speaker to speaker OR chronology of debate OR compilers of debate document, but positive or negative charge unclear or not applicable

Rules for GGPlot

Count literal references to each Article in the *projets*
Reference defined as word or series of words that conveys the message (for Article 1, this is 'libres et egaux').
Code for plotting:

```
#Make Table
Counts<-c(18, 37, 20, 13, 9, 41, 25, 8, 33, 18, 14, 11, 10, 9, 3, 1, 8)
data<-cbind(seq(1,17,1), rep(1,17), counts)
colnames(data)<=c('Article', 'axis ref', 'Counts')
data<-as.data.frame(data)
data$scaled<-data$counts/max(data$counts)

#Plot
library(ggplot2)
g<-qplot(x=data[,2], y=data[,1], data = data, color = counts, size = I(20*data$scaled), xlim=c(0.95,1.05))
g<-g + theme(axis.ticks.x = element_blank(),axis.text.x = element_blank())
g<-g + scale_y_continuous(label=function(x){return(paste("Article", x))}, breaks = c(1:17))
g<-g+theme(legend.title=element_blank())
```

```
g +labs(x='', y='')
```

Rules for Final Keynote Visualization

See attached keys