



Transitory and Resilient Salient Issues in Party Manifestos, Finland, 1880s to 2010s

Content Analysis by Means of Topic Modeling

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Abstract. The performance of computational methods has been proven many times over. However, special efforts may be needed to ensure access to the research results achieved by means of these methods within specialized social science disciplines. This study joins previous efforts towards the mainstreaming of a specific computational method in the political science field of salience research. Rather than joining previous studies on the influence of the salience of issues to parties upon their electoral results or their propensity to form or join governments, this study represents the part of salience research that examines salience and its changes in their own right. Adapting ideas of digital historical humanities given the long study period, this study inserts salience theory within the frames of critical junctures theory to examine issues discontinuity, and path dependence theory to account for issue resilience. Using Latent Dirichlet Allocation topic modeling with 734 Finnish party manifestos from the 1880s to the 2010s as the research material, testing two hypotheses gave the following results. First, although many issues in the manifestos have been transitory, there have also been issues with resilience over critical junctures. Second, although there are resilient issues whose meanings have stayed the same by and large during longer periods, the meanings of some other resilient issues have pronouncedly changed, either suddenly at critical junctures or gradually during periods of path dependence. The implications for future studies are also discussed.

Keywords: Computational methods · Digital humanities · Critical junctures
Path dependence

1 Introduction

Despite the proven performance of computational methods, special efforts may be needed to make the research results achieved by means of these methods accessible within specialized social science disciplines. This study continues steps taken by others towards mainstreaming computational methods in the political science field of salience research while using a specific computational method.

In salience research, the ‘salience’ of issues means that these issues are central, important or pivotal to political parties according to their party manifestos or their other explicit statements. Some of salience research has probed the consequences of the

salience that parties give to issues such as their electoral success or failure or their propensity to form or join governments [3, 9, 15, 42, 48]. Salience research with a methodological emphasis also exists, such as elaborating new computational methods to examine salience or comparing results obtained by means of computational methods to results achieved using other methods [33, 34, 37]. However, this article joins two further common types of salience research: one that examines salience in its own right as an indicator of political and policy contents [21], and another that is comprised of longitudinal studies on trajectories of salience [12, 46]. More specifically, this article seeks to contribute to filling an empirical research gap that was identified in the predominance of short- or medium-term rather than longer-term studies on salience and its changes [12, 21, 51]. This article covers the entire period from the 1880s to the 2010s, during which party manifestos have been written and published in Finland.

In short- and medium-term studies on salience it is not relevant to consider profound societal and political historical changes as such changes hardly have occurred [12, 21, 51]. However, both in research using traditional methods and computational methods [25, pp. 88–116] the situation is different if the study period is long. Given the 130-year study period of this paper, salience theory is inserted within the frames of path dependence theory to consider historical continuity [39], and critical junctures theory to consider historical discontinuity [11, 55]. The long study period also calls for distinguishing resilient and transitory issues. A first research question can be formulated:

1. Have there been resilient issues persisting over critical junctures of societal and political transformation in party manifestos, and have there also been transitory issues without path dependence over these junctures, and if there have been either or both types of issues, what are they more exactly?

Referring to previous studies [16, 28], this article also focuses on possible changes in the meanings of politically salient issues despite the empirical resilience of their constituent words insofar as the societal and political context of the issues and the words has experienced profound changes. The second research question becomes:

2. Have meanings of resilient issues transformed while the context of these issues and their constituent words has changed with special reference to critical junctures of societal and political historical transformation, and if so, how have these meanings changed?

Four sections follow. They deal with theory and hypotheses, the method and the research material, the empirical results, and the significance and implications of this study.

2 Theory

2.1 Salience Theory

Budge [8, p. 861] offers a summary of political science research on salience, often alternatively spelled ‘saliency’: ‘Saliency approaches derive from the basic idea that political parties define their policies by emphasizing certain topics more than others, particularly in public documents and debates.’ According to salience theory, parties are expected to emphasize issues differently, such as doing so with a different frequency or with different

value emphases, rather than taking up different issues than other parties do [9, 42]. Above we have indicated studies that represent three types of salience research [3, 9, 12, 15, 21, 42, 46, 48].

We also indicated above that in short- or medium-term salience research [12, 21, 46] historical continuity and discontinuity may rightfully be of little or no concern. However, we can expect that during the study period of 130 years in this study historical continuity and fundamental societal and political historical transformation have alternated. Taking this into account, we insert salience theory within the frames of a theory of persistence, meaning path dependence theory, and a theory of discontinuous change, meaning critical junctures theory.

2.2 Path Dependence Theory and Critical Junctures Theory

In their treatise on historical digital humanities research, Guldi and Armitage [25, pp. 88–116] argue that computational methods provide novel opportunities for long-term research with a historical orientation. As indicated, in this study efforts are taken to get a hold of the long study period with the help of two theories, path dependence theory and critical junctures theory.

Path dependence approaches have been used in many research fields, from the natural sciences to technology studies, economics, and other social science domains. In this study, we understand path dependence to be comprised of continuity with few or no actor incentives to seek or accept fundamental change [49]. In their turn, critical junctures comprise moments or episodes of historical contingency, during which alternatives for institutional and other change stay open unlike before [11, 55]. Towards the end of a critical juncture opportunities dwindle and path dependence sets in [39].

Country-level examples of path dependence include periods of war or other unrest, periods of peace and stability or stagnation and decline, and periods of institutional resilience and stability. Country-level examples of critical junctures include the gain or loss of independence, changes in international political alignment, the introduction of democracy or autocracy, critical elections that fundamentally mold relationships between political parties, and moments or episodes of discontinuous fundamental institutional change.

2.3 Hypotheses

In this study evidence to specify critical junctures and path dependence is sought from previous historically oriented empirical research. Within historical research it is solidly established that periodization comprises a most important theoretical step to take [35]. Further contextual evidence is brought into this study from comparative studies between countries categorized into groups with resembling members [45]. The first hypothesis can be formulated with special emphasis upon examining historical continuity:

Hypothesis 1: Among the politically salient issues in party manifestos there are issues that are resilient, path-dependent, and transcending critical junctures.

Hypothesis 1 is worded in a general way. However, it is based on the theoretical concepts of critical junctures and path dependence, whose specific timing or duration

has to be specified using evidence from previous empirical research. In this study, resilient issues mean those that persist in the longer term, including that these issues may transcend one or more critical junctures. Transitory issues are understood to be composed of issues that lack the characteristics of the resilient issues. Referring to results of previous empirical research, this study also seeks for resilient core issues present in party manifestos, including core issues that have transcended critical junctures, although parties may have made minor or major adaptations to their interpretation of these issues in their manifestos.

Read as if backwards, Hypothesis 1 suggests that issues that are not resilient, path dependent and transcending critical junctures are transitory and inclined to disappear at critical junctures. However, we must consider the possibility that certain issues may reappear after an interval punctuated by one or more critical junctures.

In cross-sectional or short-term studies, the duration of the study period may not make it necessary to consider the possibility that smaller or larger changes may have occurred in the meanings of salient political issues and the meanings of the constituent words of these issues. However, in longer-term studies it may be well-advisable to take possible smaller or bigger changes of meanings into account [16, 28]. The second hypothesis becomes:

Hypothesis 2: While the entire study period is divided into sub-periods at critical junctures, moving from sub-period to sub-period modifications appear in the meanings of salient issues and their constituent words in historically changing societal and political contexts.

Resembling Hypothesis 1, Hypothesis 2 is general in its wording. However, Hypothesis 2 does have a theoretical basis in research on political conceptual history [27], according to which meanings of words are context-bound and may change as the context changes. Hypothesis 2 also shares a part of its theoretical grounding with Hypothesis 1 in that the sub-period division derives from the specification of critical junctures with the support of evidence brought from previous empirical research.

3 Research Material and Research Method

The primary research material includes 734 party manifestos from the 1880s to the 2010s that were available in the Finnish language in the POHTIVA party manifesto database of the Finnish National Data Archive in Spring 2016 [50]. The number of the manifestos to examine can be seen as promisingly many to generate interesting results. Moreover, more differentiation is present in Finland in manifesto types than in some countries. There are general manifestos (alternatively called ‘manifestos on principles’ or ‘manifestos on objectives’, for example), electoral manifestos (for parliament elections, for local government elections, and more lately also for the European elections), and special manifestos for individual policy sectors.

As indicated, secondary material from academic research on Finnish social and political history is used for contextualizing the salient issues in the manifestos with

evidence on societal and political transformations and for distinguishing critical junctures and periods of path dependence. The study period is divided into sub-periods at critical junctures that are seen as the foremost.

This study uses topic modeling, which is a common method of unsupervised computational content analysis. Words in text documents comprise the observables. In this study, the configurations of words representing political issue areas are examined as topics estimated by means of topic modeling. Issues and topics have also been incidentally equated in the issue salience theory [8, p. 861]. The topics are substantively and contextually interpreted with the support of the secondary historical research material.

Computational topic modeling belongs to ‘bag-of-words’ methods, in which words are examined irrespective of their roles in sentences but certainly considering the co-location of these words with other words, meaning their ‘co-words’ [13, 22]. Many words may be important in more than one topic, used in more than one context of utilization, and possibly having more than one meaning, either cross-sectionally or at least over time. Following good practices of computational examination, ‘stop-words’ were eliminated from the textual data [13, 19, 23, 37]. However, even after this elimination, topics may include common words with substantive contents that are too weak to enable interpretation. To avoid loss of information from truncation, a special computer program of the Finnish government research-supporting company CSC, Ltd., was used to return words to their noun, adjective, or verb roots. However, perfect stop word elimination and lemmatization programs do not exist, the remaining errors have to be corrected manually, and the ultimately remaining low number of errors has to be tolerated.

This study applies Latent Dirichlet Allocation (LDA) topic modeling [1, 6, 7, 24], which is intended for revealing latent configurations in texts. It is for the researcher to interpret these configurations semantically. In LDA, documents comprise mixtures of topics that regulate the probability that words find their way into these documents. In LDA, the topics and their probability distributions in the documents comprise hidden random variables that are built into a hierarchical probability model and estimated by means of approximating the conditional distribution of these variables in the documents examined.

LDA gives that number of topics that the researcher has decided to estimate in a decreasing order or probability, and a list of words in each topic, also in a decreasing order of probability. The technical criteria of LDA allow estimating tens of topics from research material such as the one in this study. However, “[w]hen topic modeling is used to identify themes and assist in interpretation, rather than to predict a knowable state or quantity, there is no statistical test for the optimal number of topics or for the quality of a solution” [14, pp. 582–83]. The criteria to decide upon the number of topics to estimate must be sought from the theoretical background, previous empirical research, the research material, and even the cognitive manageability of smaller rather than larger numbers of topics. Proposing hypotheses and testing them rather than carrying out exploratory analysis provides the auxiliary benefit of better control over topic model robustness [57].

Evidence can be utilized for the approximate number of aggregates of political opinion in a Nordic country with a proportional electoral system, the parliamentary

representation of numerous parties, and coalitions of parties when majority governments are formed. Berglund and Lindström [5] proposed a Nordic-Scandinavian five-party system model (see also Knutson [32]), which does not incidentally correspond with Gallagher's [20] estimates of the number of effective parties in the countries of the group. Taking all grounds to decide upon the number of topics to estimate into account we decided to keep the number of topics in all our examinations at the low figure of five.

4 Results

The theoretical background of this study required discerning periods of path dependence in Finnish history from the 1880s to the 2010s, punctuated by critical junctures. Evidence from research on Finland's societal and political history suggests that this country's declaration of independence in December 1917 comprises the first critical juncture during the study period [26]. Finland's withdrawal from World War II in September 1944 defines the second juncture [30, 41, 56]. The 1966 formation of a popular front government that included the Democratic League for the Finnish People (DLFP, SKDL in Finnish; with the Finnish Communist Party as its foremost member) for the first time since 1948 suggests a third critical juncture. The dissolution of the Soviet Union at the end of 1991 opened the opportunity for Finland to join the European Union three years later [44], suggesting 1995 to be a fourth critical juncture.

We used as a starting point a previous study, in which party manifestos written and published in Finland from the 1880s to the 2010 had been examined en bloc using topic modeling [2]. Presented in the order of probability from the highest to the lowest, the five topics estimated were substantially interpreted on the basis of their highest probability words (Fig. 1). The examination indicated the changing probabilities of these five topics during the study period, and connections were drawn between critical junctures of societal and political transformation on the one hand, and on the other the changing proportions of each topic from the total of 1.00 calculated over all topics.

Starting from an examination of the entire research period of 130 years offered two benefits. First, it provided a substantive and technical baseline, and second, it comprised a robustness check as its results can be compared with the results of the topic model estimations carried out separately for each of the five sub-periods separated by critical junctures. Both as a further robustness check and as a check of replicability, each of the topic model estimations for the five sub-periods were run five times. The trial runs suggested that the topical structures presented for the sub-periods were solid enough to present and interpret¹.

4.1 Probing Hypothesis 1 on Resilient Issues in Party Manifestos

As indicated above, five sets of five topics were separately estimated, meaning one set for each of the five sub-periods of the entire study period. Ten highest-probability words in each topic were selected as the basis of the interpretation. The number of manifestos

¹ The results of the trial runs are available on request from juha.koljonen@helsinki.fi.

in which each one from among the five topics estimated during each sub-period was the strongest was specially pinpointed (Table 1).

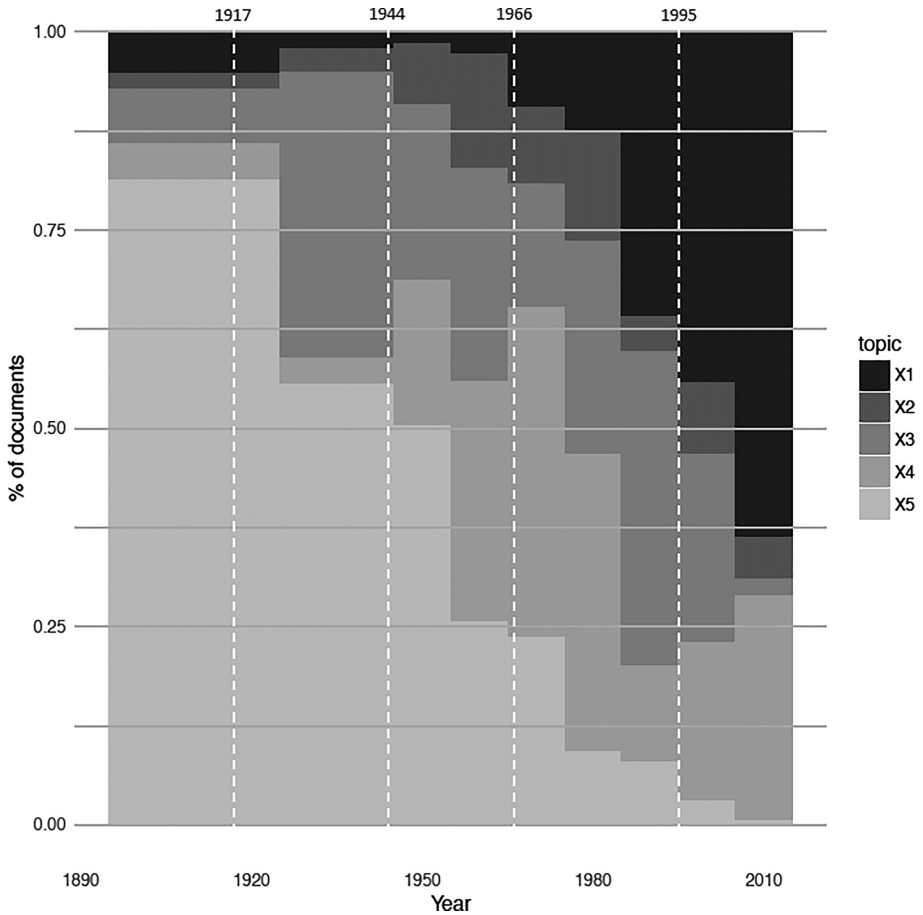


Fig. 1. Five topics in Finnish party manifestos, all parties. (Explanation: In [2], the topics had been given the following names: Topic 1, Municipal Welfare Services, Topic 2, Production Infrastructures, Topic 3, National Development in the International and European Context, Topic 4, Educational and Related Opportunities, and Topic 5 Nation-building and Societal Inclusion. The dashed vertical lines in the figure indicate the critical junctures that previous empirical research on societal and political transformations in Finland suggest.)

Table 1. Estimation of five topics for each of the sub-periods of the study period.

1880–1917 (n = 15)		
Topic 1	n = 5	Country/land, the state, law/justice, law/act, to get/to make, the people, Finland, work, to be able, common
Topic 2	n = 2	Language, municipality, office/position, school, amount/quantity, population, [an evident remaining lemmatization error], typical of, of population, Sweden/Swedish
Topic 3	n = 3	Farm, rent, union, rural dweller, of soil/of land, farming, country/land, to organize, municipality, resource
Topic 4	n = 2	Language, political party, to keep/to maintain, question, office/position, of the state/political, civilization/culture/education, Sweden/Swedish, good, one
Topic 5	n = 3	Municipality, everything, work/labor, workers, time, field/domain, interval, to help/to support, political party, the people
1918–1944 (n = 51)		
Topic 1	n = 14	Country/land, to get/to receive/to acquire, issue, political party, the state, all, great, the people, to be able, government
Topic 2	n = 16	Economy, the people, country/land, action, the state, law/justice, political party, economic, to develop, of law/of act
Topic 3	n = 6	Country/land, to get/to receive/to acquire, farm/space, municipality, rural dweller, work/labor, economy, farm/the act of cultivating, to cultivate, the state
Topic 4	n = 10	The people, work, common, Finland, the state, citizen, country/land, law/justice, to be able, organ
Topic 5	n = 5	Power, the working people, movement, class, time, great, [an evident lemmatization error], shortage, society, high
1945–1966 (n = 51)		
Topic 1	n = 24	Country/land, work/labor, economy, the people, common, action, society, power, municipality, organ
Topic 2	n = 5	Movement, share, action, political party, trade/commerce, member, government, interest/benefit, all, country/land
Topic 3	n = 3	Country/land, production, year, industry, large, to be able, amount, material/substance, raw, economic
Topic 4	n = 15	Municipality, municipal, work/labor, action, to get/to receive/to acquire, task/function, dwelling, all, to aim/to strive, attention
Topic 5	n = 4	The state, same, tax, society, to get/to receive/to acquire, area/region, system, size/whole, taxation, field/domain
1967–1995 (n = 332)		
Topic 1	n = 72	Country/land, energy, production, use, environment, traffic, area/region, forest, nature, to be able
Topic 2	n = 97	Municipality, work/labor, to get/to receive/to acquire, child, dwelling, service, all, the state, to be able, to develop
Topic 3	n = 33	Finland, country/land, to be able, political party, the people, development, work/labor, common, all
Topic 4	n = 52	Activity, education, opportunity, research, culture, development, society, to develop, task/function
Topic 5	n = 78	Work/labor, common, economy, country/land, the people, society, power, to make, the human being, to develop
1996–2012 (n = 285)		
Topic 1	n = 41	To be able, area/region, country/land, environment, Finland, Europe, union, countryside, politics/policy, development
Topic 2	n = 65	Common, the people, society, country/land, economy, the human being, work, right/justice, power, politics/policy
Topic 3	n = 26	Work/labor, tax, income/revenue, Finland, to get/to receive/to acquire, country/land, Finnish, basic, municipality, taxation
Topic 4	n = 104	Municipality, work/labor, to serve, service, good, common, security, [evident lemmatization error], country/land, health
Topic 5	n = 49	Child, municipality, service, family, work/labor, youth, education, to be able, opportunity, culture

Explanation: The words in the word lists are English translations of Finnish words. More than one possible translation is indicated where necessary. Each n for each sub-period indicates the number of manifestos during this period. Each n for each topic during each period indicates the number of manifestos in which the topic is the highest-probability topic. The low number of two for evident lemmatization errors was deemed to be bearable. In the few additional cases in which lemmatization had not been able to return the word in its basic form, this basic form was anyway used as the basis of the interpretation.

Probing Hypothesis 1 on resilient issues does not require more than the selective interpretation and labeling of the twenty-five topics. It is indeed seen as enough to give examples of such issues, and if necessary support the examples with evidence on societal and political transformations in Finland during the study period. Caution is advisable concerning the results where n , the number of manifestos in which a topic indicated, is less than 5.

Questions of Swedishness comprised issues only in the first sub-period from 1880 to 1917 (Topic 2, Topic 4). Soon after Finland's independence, the predominance of the Finnish language was solidly established, and the rights of the Swedish-speakers were given constitutional and other legal guarantees [40]. Issue-raising from the viewpoint of class-conscious organized labor is strongly visible only in Topic 5 and only in three manifestos in the sub-period from 1918 to 1944. Industrial policies comprised a leading issue in a topic only in the 1945 to 1966 period (Topic 3; [43]) although only in three manifestos. Finally, European issues have received emphasis only in the last sub-period, from 1996 to 2012, which has happened in quite a number of manifestos (the highest-probability Topic 1; [44]).

There has been no dearth of resilient issues in the manifestos transcending one or more of the critical junctures of 1917, 1944, 1966, and 1995. Issues of rural development, land reform and farming were present during the first two sub-periods (Topic 3 in both sub-periods; [10, 29]). Issues of law/justice were present in the first sub-period (Topic 1), the 1918 to 1944 sub-period (Topic 1 and Topic 4), and in the 1995 to 2012 sub-period (Topic 2). Issues of services can be found during the 1967 to 1995 period (Topic 2) and the 1996 to 2012 period (Topic 4 and Topic 5). Issues emphasizing work and labor extend through all sub-periods (Topic 5 in the first sub-period, Topic 3 in the second, Topic 1 and Topic 4 in the third, Topics 2, 3, and 5 in the fourth, and Topics 3, 4, and 5 in the fifth sub-period). Issues of municipalities have also been resilient throughout all sub-periods (Topics 2, 3, and 4 in the first, Topic 3 in the second, Topics 1 and 4 in the third, Topic 2 in the fourth, and Topics 3 to 5 in the fifth sub-period [53]).

Evidence thus indicates that resilient issues have been amply present in party manifestos in Finland. Hypothesis 1 can be sustained.

4.2 Probing Hypothesis 2 on Changes in Meanings of Words Constituting Issues in Party Manifestos

The resilient issues in the party manifestos form the empirical basis for probing Hypothesis 2. In the sub-period 1880 to 1917, constituent co-words of a salient issue included both words referring to tenant farmers cultivating land against rents paid to landowners, and words referring to the substantive landless rural population without permanent dwellings of those days (Topic 3, see Table 1). In the sub-period from 1918 to 1944 and in another topic, words referring to farming coexisted with words referring to the acquisition of land by the previous tenant farmers and other previously landless rural dwellers in the course of land reform policies, policies of rural settlement, and development policies aiming towards higher agricultural productivity (Topic 3; [29]).

In the first sub-period from 1880 to 1917, the word meaning 'law/justice' co-existed with other words such as 'the state and law/act', first and foremost indicating a salient

issue of concerns with law and order (Topic 1, see Table 1). In the sub-period from 1918 to 1944, law/justice co-existed with words of the economic vocabulary, indicating an issue concerned with the distribution of income and wealth (Topic 2), and with words such as ‘the people’, ‘the state’, and ‘the citizen’, indicating an issue of justice and civil freedoms (Topic 4). After an interval of two sub-periods, in the 1996 to 2012 sub-period law/justice appears again, but now co-existing with words such as ‘common’, ‘society’, and ‘the human being’, indicating an issue of social justice in a welfare state guaranteeing social and economic rights to the citizens (Topic 2; [36]).

The Finnish word for ‘service’ has received particular emphasis in the two latest sub-periods in the party manifestos. From 1967 to 1995, this word co-existed with such words as ‘the municipality’, ‘work/labor’ and the ‘child’, together indicating a salient issue of municipal welfare service provision to enable the gainful employment of both male and female adults including those with children (Topic 2, see Table 1). From 1996 to 2012, besides words found in the preceding period, the co-words of ‘service’ included such words as ‘family’, ‘education’, ‘youth’ and ‘culture’ (Topic 5), indicating an issue of an ever-extending provision of welfare state services by the municipalities [4, 5, 38, 47, 54].

The trajectory of the word for ‘work/labor’ includes its co-existence with words referring to the municipalities, workers, and help and support activities from 1880 to 1917, indicating a specific salient issue of those days (Topic 5, see Table 1). From 1918 to 1944, ‘work/labor’ co-exists in two foremost co-word contexts of specific salient issues, namely with words referring to land reform, rural settlement policies and farming on the other hand (Topic 3, see Table 1), and on the other with the word law/justice (Topic 4; [30, 41]). From 1945 to 1966, newly arisen co-words for work/labor include the word for economy during a period during which collective bargaining arose step by step into a major salient political issue in Finland (Topic 1; [17]). During the same period, work/labor also coexisted with such words as ‘the municipality’, ‘municipal’, and ‘action’, indicating an issue of another kind (Topic 4). From 1967 to 1995, co-words of work/labor came to include ‘the child’, ‘dwelling’, and ‘service’, indicating a salient issue of the coordination of collective bargaining and the municipal provision of welfare state services (Topic 2; [18]). From 1996 to 2012, work/labor was present in no fewer than three co-word contexts of salient issues, meaning an economic policy context (Topic 3), a municipal welfare services context with an emphasis on basic social security and health (Topic 4), and another municipal welfare services context with focus on the family, education, the youth, and culture (Topic 5; [31, 38]).

The co-word contexts of the noun ‘municipality’ and the adjective ‘municipal’ have changed profoundly during the study period. 1880 to 1917 salient issues included introducing democracy in a local government dominated by the largest taxpayers and land-owners until the final year of this period (Topic 2, see Table 1), and municipal roles in relieving problems of tenant farmers, the landless population (Topic 4), and the working class (Topic 5; [29]). In the next sub-period extending to 1944, the second from among the above issues was present in a moderated form after a land reform and other related policies had taken affect (Topic 3). From 1945 to 1966, an issue that stood out included the word for dwelling as one of its constituent words, referring to measures towards aspiring home-builders and home-buyers and towards providing for rental housing

(Topic 4; [52]). The sub-period from 1967 to 1995 added relatively little to the picture of the previous sub-period (Topic 2), whereas the 1996 to 2012 sub-period included the issue of completing the welfare state by means of the municipal provision for basic social security and health (Topic 4) and for child care and other services for families, education services, services for the youth, and cultural services (Topic 5).

Even after major societal and political transformations in Finland, there are words that preserve their original meaning by and large. Moreover, words that used to have a specific historical meaning should be allowed to preserve this meaning in research. However, there are also words whose empirical referents have been pronouncedly modified. Let us take for example the Finnish word for 'landowner'. Early, this word predominantly referred to large and medium landowners with tenants although also to the other independent landowners. Since the 1920s the word no more could refer landowners holdings tenants as such landowners ceased to exist. Moreover, the word referred to the substantially grown numbers of small landowners. Phenomena themselves have also been modified. For a well-representative example, the municipality became an institution of evolved local democracy in Finland in 1917, and since the 1960s it turned into the foremost provider institution of welfare services.

Resilient words whose meanings have changed because of their diffusion to new co-word contexts are many in the Finnish party manifestos. In conclusion, Hypothesis 2 can be sustained.

5 Discussion

The empirical results enable answering the first research question on whether there have been both resilient issues persisting over critical junctures of societal and political transformation and more transitory issues without path dependence over these junctures in the Finnish party manifestos. Both kinds of issues could be amply identified.

The results also make it possible to answer the second research question on changes in meanings of constituent words of resilient salient issues in Finnish party manifestos, while the context of these issues has been changing in connection to critical junctures of societal and political historical transformation. Changes could indeed be discerned in the context-influenced meanings of constituent words of salient issues such as those with rural, land, and farming emphases, emphases of law/justice, services, emphases of work/labor, and emphases of the municipalities and the public services.

This study has combined the computational examination of salient issues and issue areas in Finnish party manifestos, and the longitudinal examination of critical junctures and path dependence of salient political issues in Finnish party manifestos during Finland's societal and political history from the 1880s to the 2010s. The interpretatively augmented computational content analysis that was carried out had both a computational component and a historical interpretative component.

The results obtained could hardly have been achieved otherwise, let alone within the available timeframe and without a major historical archival research project. As was indicated at the beginning, this article joins two from among the types of salience studies, meaning the examination of salience in its own right as an indicator of political and

policy contents [21], and examining trajectories of salience in a longitudinal way [12, 46]. This study has first and foremost intended to contribute to these two types rather than other types of salience research.

The two theories used for framing and contextualizing the computational content analysis of Finnish party manifestos do not require the downright explanation of the manifesto contents with reference to critical junctures and path dependence. This is because critical junctures and path dependence contextualize rather than determine the textual contents of party manifestos. Moreover, party manifestos and other political party statements comprise a derivative phenomenon of the flux of political and societal historical transformation, which means that these statements are not equal to the actual or expected phenomena themselves that these statements are about. Being political and societal superstructures, party manifestos may have a relative independence in respect to what they are about, including politics, society and their changes that political parties wish to impose. This means that the coupling of these manifestos to what they are about can be expected to be loose or of an intermediate strength rather than tight. A good deal of the relevance of this study to the empirical research field in which it is positioned can be sought from conclusions such as those above.

This study has also more technical implications. Pruning textual data such as the one used in this study before its examination is laborious and error-prone. Even after the manual elimination of lemmatization errors left after processing with a computer program, a minimum of incomplete lemmatizations remaining has to be tolerated. The study process also emphasizes the technical importance of robustness safeguards and replicability checks.

This study has navigated between two extremes. In one direction we find research that is technically too trivial and substantially too specialized to interest an expert in social informatics. In the other direction lies research that is not technically accessible for common researchers in entrenched social science disciplines, or is not experienced to contribute sufficiently to empirical research within such a discipline.

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