



How Hamburg Cooperated with Turku: An Outline

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Abstract: The Public Choice Research Centre (PCRC) operated as the Academy of Finland's Centre of Excellence from 2008 to 2013. Its founding partners were University of Turku, Turku School of Economics and University of Hamburg. The focus of research of the Hamburg group was on three topics: voting power measures, voting and the aggregation of preferences, and n-person bargaining. This paper briefly characterizes these topics and points out how they were intertwined in the research accomplished by the Hamburg group – in cooperation with the Turku group.

Keywords: voting and voting power, power index research, elections, aggregation of preferences, European Union.

1. Introducing PCRC

The PCRC website says that the “Public Choice Research Centre operated as the Academy of Finland's Centre of Excellence from 2008 to 2013.” Further, “in its founding the partners of the Centre were University of Turku, Turku School of Economics and University of Hamburg.” Obviously, there was a fundamental asymmetry in the communication embedded in this partnership. While the Turku side could freely communicate in their native Finnish, without confessing their secrets to the members of the Hamburg group, the latter were never sure that their German was not understood by the Finnish side. Yet, there were no

conflicts along this line and coordination worked surprisingly smoothly. Of course, looking backwards one can always claim that there should have been more cooperation and some further synergy effects were not unearthed. In what follows I will outline what has been achieved in joint work. Of course, this can only be a skeleton. Many outcomes of cooperation never came to the surface because they were implicit only or the discussed project and its possible solutions were considered invalid, inconsistent or unimportant – and ended up in the large bin of “wasted thoughts” (which are however a necessary by-product, and not wasted at all).

In 2008, when PCRC was formally installed as Centre of Excellence, the Hamburg group contained only two persons: Andreas Nohn who held the position of a junior researcher assigned to accomplishing a PhD in economics, and myself. I was a member of a larger informal international network of scholars who worked in the area defined by the PCRC project and inspired me in my research. One of these inspirers and co-author was Stefan Napel who became an official member of PCRC in 2009, after being associated already for one year. He had moved from University of Hamburg to Bayreuth for a professorship in economics, but he still was considered a member of the Hamburg group. Nicola Maaser, who did her PhD with me as supervisor at the University of Hamburg, accepted the status of an associate member of PCRC from 2010 onwards. After Andreas Nohn received his PhD at the University of Hamburg and left academics, Alexander Mayer of University of Bayreuth was nominated by PCRC for the position of a junior researcher. In addition, there were many scholars closely related with the PCRC project who never held a formal position in this project, but contributed to PCRC conferences and workshops, and supported the project as co-authors and sparring partners for big thoughts. On the Hamburg side, I have to mention my former PhD students Matthew Braham, Nicola Maaser and Frank Steffen who made academic careers of their own. Even today, much of their very successful work is still within the range of the PCRC research agenda.

What are (or were) the topics studied by the PCRC? A rather general answer to this question we find on the PCRC website:

“1. Design of decision-making institutions and policy analysis. Specific projects of this group include decision-making procedures and power measurement as well as the relationships of various game-theoretic solution concepts. Particular emphasis is laid on institutions of the European Union.

2. Democratic governance. The methodological approaches resorted to include conceptual analysis, argumentation theory, computer simulations as well as experimental methods. Key subjects under scrutiny in this group

are deliberative democracy, referendum institutions and consensus reaching procedures.”

2. PCRC research topics outlined

The focus of research of the Hamburg group was on three topics: voting power measures, voting and the aggregation of preferences, and n-person bargaining. In what follows, I will briefly characterize these topics and point out how they were intertwined in the research accomplished by the Hamburg group.

2.1 Voting power measures

Let us assume there is a parliament with three parties A, B, and C. Further, let us assume that A, B, C control 48 votes, 47 votes and 5 votes, and the decision rule is simple majority, i.e., $d = 51$. Which winning coalition do you expect to form? Without having additional information all four winning coalitions seem to be equally likely. However, you may reject the idea that the grand coalition $\{A,B,C\}$ will form¹ because the coalition is still winning if any of its members is leaving thus implying substantial instability. Perhaps you also reject the idea that the coalition $\{A,B\}$ will form as A and B, respectively, may prefer to form a coalition with C because in the bargaining over cabinet seats or other benefits faction C is likely to be “cheaper” than the alternative larger faction. However, C may use its unique position and increase its price so that it is (almost) as expensive as A to B and B to A. In the limit, coalitions $\{A,B\}$, $\{A,C\}$ and $\{B,C\}$ seem to be equally likely. We conclude that the a priori voting power of the three parties is identical and, by some standardization we assign power values $(1/3, 1/3, 1/3)$ to describe the (a priori) voting power distribution in the given voting body.

If we compare this distribution to the seat distribution then we see that the seat distribution is a poor proxy of voting power. Many rather sophisticated measures have been developed – such as the Shapley-Shubik index, the Banzhaf index, the Deegan-Packel index and the Public Good Index – to capture the a priori voting power in voting bodies with larger numbers of members (i.e., voters), more complicate structures, and more sophisticated decision rules.² All these measures meet the objection that

¹ In coalition theory, the grand coalition is the coalition that is formed by all members of a voting body. This is different from everyday language and political science parlance.

² These measures assign to each “voting game” of n players, given by a decision

they do not take the preferences (or ideological positions) of the voters into consideration. Perhaps most prominent, this critique was repeatedly published by Garrett and Tsebelis. In Garrett and Tsebelis (1999a,b) they argue that power indices are inappropriate to measure the voting power in European Union decision making. In the same issue of the *Journal of Theoretical Politics* where they published their paper Mika Widgrén and I published a rejoinder with the title “Why power indices for assessing European Union decision-making?” (Holler and Widgrén 1999). Our main arguments were that if we design voting institutions like EU Council of Ministers or the EU Parliament (a) we do not know the preferences of the (present and future) voters and (b) there should be an adequate power structure independent of the particular preferences of the voters (so that the voting body produces acceptable results “most of the time”).

Note that EU membership varied and perhaps will also vary in the future. We did not object to the idea of including the preferences of the voters if we forecast voting outcomes of a particular voting body – if we know them. Yet, there is a quite difference between institutional design and forecasting a particular outcome of a specific voting body. If there is a one-dimensional policy space such that the preferred position of party C is between the most preferred positions of A and B, then a coalition {A,B} is not very likely. We would expect either {A,C} or {B,C}. Then the power distribution is $(\frac{1}{4}, \frac{1}{4}, \frac{1}{2})$. This looks good for C, but it also faces the threat that A and B revise their positions in order to get so close to each other to be able to coalition {A,B} – to be no longer at the disposition of C when it comes to forming a winning coalition.

On the federal level, the German political scenario of the 1960s and 1970s is a good illustration of what we just discussed with respect to parties A, B, and C. The smaller party FDP (the Liberals) had a substantial share in governing the FRG as measured by time in Government and cabinet posts. The scenario changed with the entry of a fourth party in 1983: the Greens.

In later work with Stefan Napel, Mika Widgrén accepted using political preference when modelling EU decision making as a non-cooperative game. In the non-cooperative game setting, you need preferences because otherwise you do not have a game. Stefan and Mika did not specify particular preferences: they plugged all possible preferences into their model. Today I would argue that they thereby took care of the a priori

rule d and a vote distribution $w = (w_1, \dots, w_n)$, a vector $\pi = (\pi_1, \dots, \pi_n)$ which represents the distribution of the a priori voting power. The measures differ with respect to the coalitions which they take into consideration and how these coalitions are dealt with.

aspect of measuring voting power. i.e., they succeeded in developing a *strategic measure of power* (SMP) by first assuming a suitable a priori probability distribution of preferences, then evaluating the respective strategic equilibrium for any given preference realization, and finally averaging the implied power implications for all realizations. However, back then there were big and sometimes even noisy discussions on the second floor of Von-Melle-Park 5 where Stefan Napel, Matthew Braham and I had our offices and Mika was a frequent guest. Some of this controversy was captured in Braham and Holler (2005b), “Power and preferences again: A reply to Napel and Widgrén.” This note refers to Napel and Widgrén (2005) and the previous discussion reflected in Napel and Widgrén (2004) and Braham and Holler (2005a). Although this work has been accomplished before PCRC was officially installed, it was highly relevant for its research agenda and the network on which its research was based.

I first met Mika Widgrén in May 1995. This was when I was the opponent at his doctoral defense at the University of Helsinki and the Finnish ice hockey team won the World Championship in Sweden in the final against the Swedish team. Both events were of some importance to Mika but he was even more interested in power indices than in ice hockey. Mika passed away on August 16, 2009, at the age of 44 at Cape Town where he attended an international conference. This was a major blow to PCRC, in general, and, more specific, to joint research between the Hamburg group and Turku.

2.2 Voting and the aggregation of preferences

Of course, there are “Aspects of Power Overlooked by Power Indices” (Holler and Nurmi 2014a) when it comes to voting and specific preferences are considered. However, if preferences are unknown or if we want to abstract from them because we want to discuss the general properties of a voting body, then power indices may be of help to distill some results. Still, there is the question which power index to choose. There are many candidates and PCRC members did not apply just one of them. In Holler and Nurmi (2014b) we discussed properties of alternative power indices. In a forthcoming paper (Holler and Nurmi 2016) we continued this discussion in view of selected problems related to the aggregation of preferences, e.g., monotonicity. A voting system is called monotonic if in any voting situation, additional support for the winning alternative does not render it a non-winner. Consequently, in monotonic systems one does not have to worry about damaging one’s favorite candidate’s chances by voting for him/her.

The paper by Napel and Widgrén (2004), referred to above, can also be classified as a contribution to the aggregation of preferences. The collaboration of Stefan Napel and Mika Widgrén was very intense with a focus on EU decision making. See, e.g., the application of their SMP to “The Inter-institutional Distribution of Power in EU Codecision” (Napel and Widgrén 2006).

Another focus of their joint work was the elaboration of a power index that took care of strategic considerations based on the notion of inferior players emphasizing the strategic aspect of power (Napel and Widgrén 2001, 2002, Napel et al. 2013). Again, significant parts of their joint work have been accomplished before PCRC was inaugurated, but important applications followed under the umbrella of PCRC. See Napel and Widgrén (2008).

Within the frame of PCRC another approach to collective decision making was developing with a focus on properties of voting procedures and the empirical (historical) significance of the social choice theory and also inspired work at Hamburg.³ This research was pursued mainly by Eerik Lagerspetz and Hannu Nurmi. Eerik had already, prior to the establishment of the PCRC, studied voting institutions in two articles with highly suggestive titles “Social choice in the real world” (Lagerspetz 1993, 1997). Inspired by his background in philosophy Eerik continued his work in the PCRC focusing particularly on the norms that underlie our intuitive concept of democracy. This work eventually led to a major opus *Social Choice and Democratic Values* (Lagerspetz 2016). Hannu Nurmi’s research focused on fundamental theoretical aspects of voting systems⁴ and, more recently, on monotonicity-related concepts.

2.3 A n-person bargaining setting

Andreas Nohn’s bargaining models, developed in his PhD thesis *Essays on Bargaining and Voting Power* (see also Nohn 2012), give a theoretical underpinning of some variations of power indices and solution concepts of cooperative game theory, e.g., in case a priori unions exist and members of a voting body (like “parties” in a parliament) are bound to form coalitions

³ See the analysis of the “Power Distribution in the Weimar Reichstag in 1919-1933” (Aleskerov et al. 2014) which I published together with Rita Kamalova and Fuad Aleskerov.

⁴ See Nurmi (1987, 1999, 2006). Although this work was published before PCRC was established, it and various related presentations at workshops and the Adam Smith Seminar were an important input to PCRC research and to the work of the Hamburg group.

with other members specified exogenously. Examples are given in Holler and Nohn (2009) and Alonso-Mejjide et al. (2010, 2012a, 2012b).

N-person games are also studied in another PCRC PhD thesis, viz. Hannu Autto's *Collective Action in Commons: Its Diverse Ends and Consequences* (Autto 2014). This work analyzed how collective action theories can shed light on the mechanisms of natural resource management with special reference to common pool resources.

2.4 Mechanism design: theory and practice

As stated in the PCRC research plan the design of institutions was one of the main foci. In 2011, Ville Korpela published his PhD thesis *Four Essays on Implementation Theory* on the theoretical aspects of designing mechanisms. The theory of voting mechanisms is the subject of another PhD thesis initiated at PCRC, viz. Paula Mäkelä's *Essays on Voting and Ex-Ante Incentives*, presented at Aalto University in 2015. The European Central Bank was the focus of Aleksandra Maslowska's *Studies on Institutions and Central Bank Independence*, defended at University of Turku in the final year of the PCRC receiving funding from the Academy of Finland, 2012. A chapter of this study was already published in *Homo Oeconomicus* the year before (Maslowska 2011) after its discussion at Hamburg. Multiple versions of all these works were discussed in various PCRC-sponsored gatherings: workshops, seminars, colloquia with representatives of both Hamburg and Turku – often accompanied with some visitors from Europe and North America.

3. Joint publications, teaching, and exams

A recent article by Holler and Nurmi (2016) brings together the issues of aggregation of preferences through voting and the analysis of a priori voting power, and discusses their relationship. The climax of PCRC joint publication is the 762 page volume “Power, Voting, and Voting power: 30 Years After,” (2013a), edited by Holler and Nurmi.⁵ It contains forty contributions by more than 50 authors with some factual priority to PCRC members. A larger share of these contributions were already published in the quarterly journal *Homo Oeconomicus*⁶ most of them in the two volumes *Essays in Honor of Hannu Nurmi* (Holler and Widgrén 2009, Holler, Nohn, and Vartiainen 2011). These two volumes and “Power,

⁵ Holler and Nurmi (2013b) is the introductory chapter of this volume. Other joint work on power measurement is Holler and Nurmi (2010, 2013).

⁶ Beginning with volume 33, 2016, the journal is published with *Springer-Verlag*.

Voting, and Voting power: 30 Years After” are highly a visible result of PCRC and the cooperation between Turku and Hamburg. This closes the circle.

However, there are many other publications that resulted from this cooperation. Recent research that is inspired by PCRC is Maaser and Mayer (2016) which takes up Napel’s and Widgrén’s (2006) earlier ideas on the balance of power in the EU. In 2009, Mika Widgrén was the opponent for Nicola Maaser’s PhD thesis “Decision-Making in Committees: Game-Theoretic Analysis” (also see Maaser 2010) at the University of Hamburg. Nicola then became an associated member of PCRC. She presented empirical work on the distributional consequences of decision-making rules at the PCRC workshop at Turku in autumn 2012. See Maaser and Stratmann (2016).

I already mentioned Andreas Nohn’s PhD thesis “*Essays on Bargaining and Voting Power.*” Hannu Vartiainen (Turku school of Economics and PCRC member) and I were the examiners of it. We both acted as opponents in the oral exam which took place at the University of Hamburg in December 2010. In the sequel, Nohn coauthored papers on “Axiomatizations of Public Good Indices with A Priori Unions” (Alonso-Meijide et al. 2010), “Coalition Configurations and the Public Good Index,” (Alonso-Meijide et al. 2012a), and “Monotonicity of Power in Weighted Voting Games with Restricted Communication,” (Alonso-Meijide et al. 2012b).

Hannu Nurmi and I were the examiners of Frank Steffen’s PhD thesis titled *Essays in the Theory of Voting Power* submitted at the Department of Economics of the University of Hamburg. In his work, the focus was on power in hierarchies. He published several important papers on this issue.⁷ Frank Steffen’s defence took place in Summer 2002. Later, Frank Steffen contributed to the PCRC workshops of 2009, 2010, and 2012. In 2009, he presented a paper at the PCRC seminar at the University of Turku.

Much of the scholarly cooperation and exchange of ideas between the German and Finnish participants of PCRC took place in seminars and workshops organized at Turku, Tartu, Mariehamn, Hamburg and Parainen as well as in the context of the Adam Smith Seminar which was offered on Tuesday evenings at the University of Hamburg over a period of almost two decades. I guess this was especially fruitful for the PhD students within the PCRC network.

In Winter 2010/11, Hannu Nurmi and I taught a seminar in “Politics&Economics” at the University of Hamburg in its master program

⁷ See, for instance, van den Brink and Steffen (2008, 2012).

of Politics, Economics, and Philosophy. A selection of six student papers has been published by Sina Rummelhagen and Max Stobbe, both students of University of Hamburg at that time, under the title *Adam Smith meets Walras and Machiavelli*.⁸ The essays discussed the works of Adam Smith, Niccoló Machiavelli and Léon Walras.

September 2011, I spent at the University of Turku. The focus was on recent research and exchange of ideas for future work. However, I also taught twelve hours of an Introduction into Law&Economics for students interested in this subject. In addition, on September 7, my wife Barbara Klose-Ullmann and I gave a two-hour lecture titled *Eine Einführung in die Spieltheorie*. We were surprised how popular game theory was and how fluent the audience was in German language.

4. Is there a future to PCRC

After the period of Academy of Finland funding, University of Turku has assumed the responsibility of maintaining the PCRC activity albeit on a significantly reduced level of funding.⁹ Thus, the work continues in the form of joint research seminars and exchange of scholars. With the weakening of the financial structure of the PCRC, it now focuses on two research initiatives: one studies matching mechanisms and the other democratic innovations.

Of course, some of the ideas developed within the PCRC program are still very actively pursued, as several related problems remain unsolved. There is some hope that this paper motivates cooperation also in the future. Personal connections established during the period when PCRC was a Centre of Excellence continue to play a role in academic endeavors of PCRC-members. In addition to important exchange of ideas, these connections are indeed actively used in applications for future joint funding. It is likely that the PCRC-network (or parts of it) will regain more formal standing at some point.

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⁸ The volume can be downloaded, free of charge, from www.accedoverlag.de

⁹ The funding policy of Academy of Finland aims never at a 100% coverage. Rather the host institutions (i.e., University of Turku) are often responsible for up to 50% of the total project costs. This was as well the case with the PCRC.

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