

COLLECTIVE DECISIONS BY YES-NO VOTING:
SUCCESS, BARGAINING AND POWER

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Conclusions

To conclude, we briefly summarize the main conclusions and claims of the book.

1. The first requisite for a sound normative theory for the assessment and choice of (dichotomous) voting rules is a precise specification of the type of committee, council or body that makes the collective decisions under consideration. It is not possible to provide a well-founded analysis or recommendation about a vaguely specified environment, as has been the case with the traditional voting power approach.

2. In this respect we have dealt separately with two extreme clear-cut types of committee that make decisions under a yes/no voting rule as terms of reference: Take-it-or-leave-it committees and bargaining committees, of which we have provided different models whose only shared ingredient is a (dichotomous) voting rule. Nevertheless, this does not exhaust all the possible environments though: other models are no doubt possible.

3. In neither type of committee is the question of 'power' or 'voting power' the first or primary issue that arises naturally, and nor can this issue be immediately addressed in a meaningful way. Each type of committee requires a different model and a different analysis, but in both cases the model proposed assumes individuals' behaviors to be consistent with the expected utility maximization model. The introduction of utilities allows (insofar as is possible) for a coherent, and unified approach to each type of committee. In particular, the normative question of the choice of voting rule for a committee of representatives of either type can be addressed by applying the egalitarian and utilitarian principles.

4. In pure take-it-or-leave-it committees behavior follows immediately from preferences (if indifferences are discarded), so the situation is not a game situation. This means that in such a context the very notion of 'voting power' is more than dubious. In particular the notion of power as the likelihood of being decisive is purely formal and devoid of any clear power-content. The notion of success or satisfaction seems in such contexts to be a sounder basis for further analysis. On this basis it is possible to introduce utilities into the model and apply the egalitarian and the utilitarian principles in order to make normative recommendations. An a priori probabilistic model of voters' behavior or preferences leads to some recommendations that include the first and second 'square root rules' as particular cases. Nevertheless an explicit specification of the context and a formulation of the analysis in utility terms disclose the distorting and misleading effects of presenting the first as 'equalizing voting power'. This is especially so in assessing the 'distance' of a voting rule from this 'optimum', i.e. assessing inequalities, which are magnified by the traditional approach. Apart from these differences, some other conclusions are worth remarking. First, starting with a precise specification of the environment sets limits on the scope and validity of these recommendations: they only make sense in take-it-or-leave-it

voting situations, by contrast with the seemingly general-purpose recommendations of the traditional voting power approach. The limited scope of application of these recommendations may seem disappointing, given the rarity of pure take-it-or-leave-it voting situations, but it is the price that must be paid for clarifying the analysis. Second, the model discussed here is based on explicit assumptions about voters' behavior and utilities justified for normative purposes. As a consequence the limitations of the model can be seen clearly. As is well known, the a priori probabilistic model of behavior (Assumption 1) is often criticized, even assuming a normative point of view. Although other models can be considered, this one seems to us to be reasonable and the simplest. Moreover, this choice has permitted us to 'embed' the traditional model within our more general model, thus showing its inconsistencies and limitations.

5. The type of situation described as a bargaining committee is much more complex than a pure take-it-or-leave-it committee. Unlike take-it-or-leave-it committees, bargaining committees represent genuine game situations, and require a game-theoretic approach. We have modeled these situations as an extension of the classical Nash bargaining model. Our model consists of a profile of expected utility preferences over the set of feasible agreements (or, in practice, the set of feasible payoff vectors associated with it à la Nash), and the voting rule that prescribes what groups of players are able to enforce agreements. The first question that naturally arises then is what the 'value' or reasonable expectation of a player is in such an environment. The answer that we provide is also an extension of Nash bargaining theory, based on rationality requirements about a reasonable agreement in such a context. Theorem 29 provides a foundation for interpreting, in principle, most traditional power indices as candidates for measuring the 'bargaining power' that the voting rule gives to each player in a bargaining committee. The lack of compelling conditions to go further is interpretable as the degrees of freedom enclosed in our rather summary model, in other words the indeterminacy of a situation in which details not incorporated into the model are important. Non cooperative analysis shows the importance of the bargaining protocol and its impact on the players' bargaining power. Of the power indices which are candidates to express the players' bargaining power, the Shapley-Shubik index appears associated with a very simple protocol. Finally, the question of the choice of rule in a bargaining committee of representatives is addressed and yields a new and unexpected recommendation based on the Nash bargaining solution interpreted as a compromise between egalitarianism and utilitarianism.

6. In the light of the approach presented here, power indices 'recover' their game-theoretic character. The probabilistic approach makes sense for take-or-leave-it environments, but in such contexts power as decisiveness does not make sense. It is in bargaining environments that power is relevant and decisiveness may be the source of power. It is also in this context that the (cooperative and non cooperative) game theoretic approach make sense.

7. Thus, it would be wrong to interpret the above summary as the result of taking the I/P-power dichotomy emphasized in [?] to its final consequences. In fact, a marginal outcome of the analysis is that it shows the lack of consistency of

a distinction made at the abstract level rather than at the level of the situation considered. On the one hand, the notion of 'I-power' is revealed as a misunderstanding in a take-it-or-leave-it context (where its underlying probabilistic model makes sense), given the lack of sense of the notion of power as decisiveness in that context. On the other hand, if the resulting bargaining power in bargaining committees is interpreted as 'P-power', it turns out in general *not* to be an expected share in a fixed prize, but rather genuine bargaining power in a well-established game theoretic sense, and it is related to decisiveness. In fact, the model presented here accounts also for the particular preference profiles (i.e. TU-like) for which the Shapley-Shubik (and other power indices) may as well be interpreted as an expected payoff.

8. Finally, we want to stress the tentative and humble *'if.. then'* character of all the results and 'recommendations' presented in the book. We have been taught humility by ten years of joint research in which we believed again and again that we had *'at last'* seen things clearly, only to later perceive further obscurities.