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Variations on a theme by Gossen

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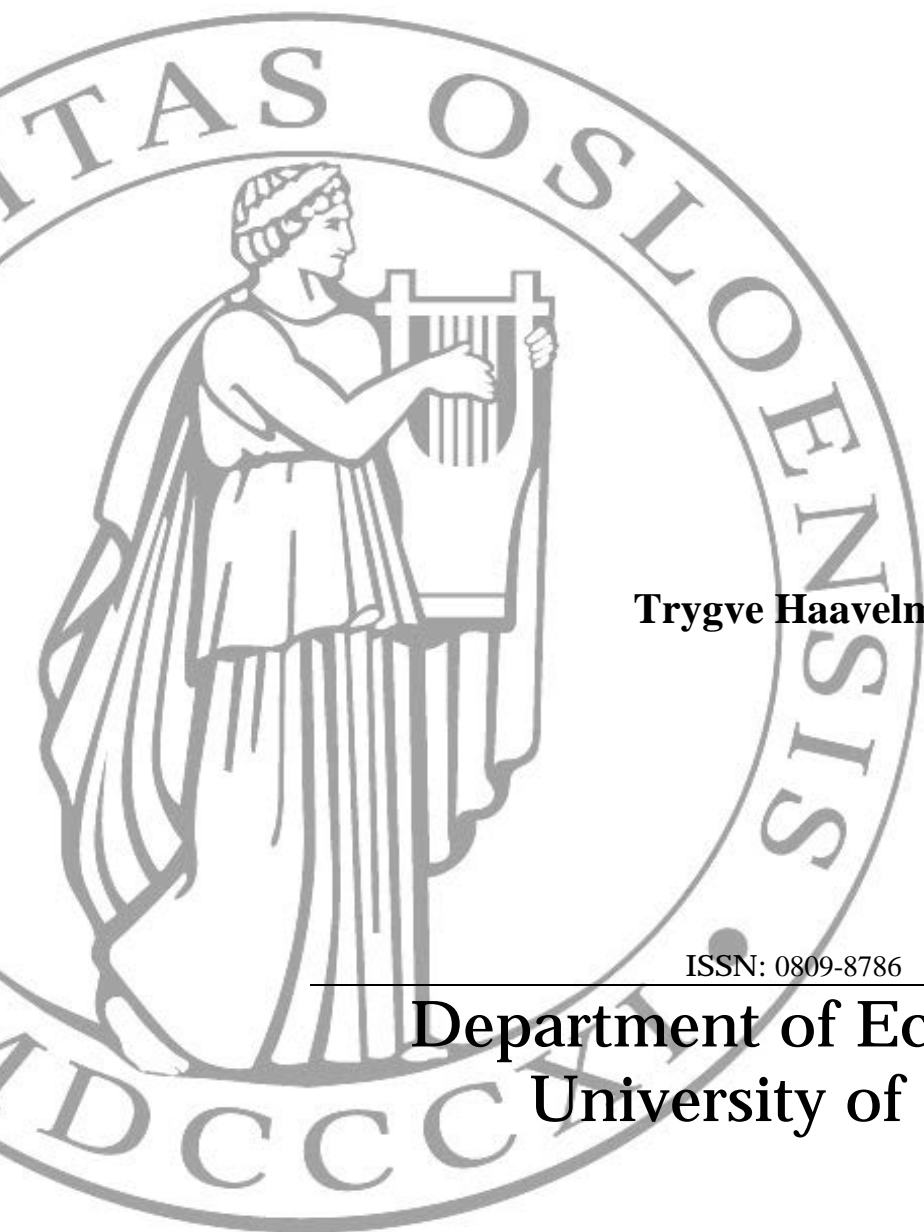
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# MEMORANDUM

No 27/2013

## Variations on a Theme by Gossen



**Trygve Haavelmo**

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# Variations on a theme by Gossen

Trygve Haavelmo

## **Memo 27/2013-v1**

(This version December 3, 2013)

### **Abstract**

The memo consists of six papers on a common theme: applying economic analysis to subjects at the time, 1972, considered non-economic. The first paper considers changes in preferences. The second considers strategies of a regime and its opposition. The third discusses collective decision making in the light of Arrow's possibility theorem and the voting paradox. The fourth discusses some problems of inefficiency in modern industrialised societies, and the consequences on the welfare of the population. The fifth discusses some aspects of redistributive policies, and the sixth various instances of the conflict between individual and collective rationality, particularly in the case of environmental and population policies.

**Keywords:** Welfare, government policy, relation of economics to other disciplines

**JEL codes:** A12, D01, I38

## Editorial note

Trygve Haavelmo is known internationally in economics primarily for his foundational works in econometrics, written in the USA in the 1940s. Haavelmo returned to Norway in 1947, was professor of the Department of Economics, University of Oslo for more than 30 years and retained his office for about 20 emeriti years after that. To his Norwegian students Haavelmo was foremost an economic theoretician with a marked applied orientation. He had a never-ending curiosity about how society functioned that often led him in his lectures to take a lead from observations he had done and then tentatively attempt to explain what he had observed by economic reasoning.

Haavelmo had a broad conception of economics. He would occasionally refer to the need for economics to draw on insight also from other social sciences and he would argue that the study of man in society was artificially divided up between the social sciences. Hence, it is no surprise that he on occasions ventured into territory considered at the time as beyond the borders of economic science.

His long essay – or rather six essays loosely tied together – titled *Variations on a Theme by Gossen* from 1972 was written during a sabbatical spent in Copenhagen in 1971/72. It was written in Norwegian and issued in low-key fashion as Memorandum from the Institute of Economics. The Memorandum comprised six essays which all dealt with issues considered at the time as outside the conventional realm of economics. The carefully chosen title pointed to the scarlet thread tying the essays together. The main analytic tool of economics applied by Haavelmo in his discussion of these rather varied topics was the reasoning that can be traced back to the work of Hermann Gossen, who is often regarded as the first to elaborate a general theory of marginal utility.

The translation was made by Associate Professor Emerita Hilde Bojer. The translation adheres closely to the original and has tried to reproduce Haavelmo's informal and colloquial style of reasoning. One inconsistency has been corrected and a few repetitions deleted.

The present memorandum is part of the Haavelmo network project aiming at making more of Trygve Haavelmo's work publicly available, not least for an international audience.

Please see <http://www.sv.uio.no/econ/english/research/networks/haavelmo-network/>.

The translation was commissioned on behalf of the Haavelmo network by Olav Bjerkholt [olav.bjerkholt@econ.uio.no](mailto:olav.bjerkholt@econ.uio.no) and Jon Vislie [jon.vislie@econ.uio.no](mailto:jon.vislie@econ.uio.no). Comments are welcome.

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## Preface

Any attempt at drawing the line between economic and non-economic matters raises rather difficult question about borderline issues. In many ways, making great efforts in this direction is artificial and hardly fruitful. All social sciences have in common the study of man in society. A division of labour is of course necessary, but division of labour without coordination can turn out poorly. In practice then, politicians are left to the difficult task of tacking together the contributions to a particular matter from experts in different social sciences. As to theory, the results may be duplication of effort or - even worse - a set of contradictions.

Coordination sounds good, but it is not a magic word to give results just by being mentioned. Neither do I believe in the alluring idea of summoning various social scientists to form a committee and tidy up. For the time being I have the belief - influenced by my connection to economics - that economists have developed analytical tools, a way of attacking problems, that can be useful far outside the borders of traditional economics. I base this belief on two fundamental circumstances.

Firstly - and perhaps unfortunately: when we try to elucidate some question about man in society, we often feel the need of an analytical tool able to *manage many things simultaneously*. Secondly, it is the case that many of the phenomena of interest to the social scientist are not “given by nature”, but could have been *chosen differently* if people had wanted to.

In the field of economics, efforts to create analytical tools have been mainly directed towards handling the two circumstances mentioned. It is true that the concrete applications aimed at belong to a limited field, but in principle the way of thinking reaches much further.

Several economists have already had the same idea. Nor is the present author the first to give explicit instances of such applications. But in the following, you may find some illustrations that supplement existing material.

The present product was created with the help of a handy little dictaphone. I found the peace and quiet to use it during a visit, now finished, to the Department of Economics of the University of Copenhagen, for which I wish to express my thanks.

Oslo, March 1972  
Trygve Haavelmo



# 1 The production of opinions

## 1.1 Introduction

All attempts at creating explanatory theories must be based on the assumption that *something* is constant in relation to the phenomena to be explained. If such assumptions fail, they must be changed for others, or we must dig beneath them to find something else we deem to be stable. In economic theory, the assumption that people's preferences are given, is basic. This assumption has enabled us make strong deductions about economic behaviour.

Even so, there are surely few economists who believe that tastes and preferences are absolutely unchanging. The second best assumption then will be that changes are small, or happen slowly. If, on the other hand, the changes are large, the explanatory power of the theory is weakened, and we need to explain how and why preferences change. We must in a sense dig for different and more deeply lying invariants.

The above considerations merely represent a general perception among economists. But it is hard in practice to see which consequences this insight should have in the form of a rational division of labour among social scientists. Some economists content themselves by stating that their theories must be understood as conditional: "*If* preferences are given ... etc." Let sociologists, psychologists and other social scientists concern themselves with possible variations in tastes and preferences. Other economists maintain that it must be a matter for economic theory itself to study at least those changes that are caused by purely traditional economic activities. However, an increasing number are starting to question whether the described division of labour is meaningful.

In order to approach an answer to this problem we should perhaps as a start distinguish between the following three cases.

a) Truly exogenous influences on preferences, that is, changes that for practical purposes are not subject to human control, like effects of the climate or other aspects of the natural environment. We shall not further consider such authentically autonomous changes.

b) Changes due to human activities, that human beings themselves cause, but not intentionally. Below, we shall have something more to say about such changes.

c) Changes intentionally caused by persons or groups with the power and possibility to influence others, whether for business purposes or from so called noble motives. In other word: consequences of deliberate manipulation, as current jargon has it.

In the following, we shall mainly consider the third category of changes

in preferences. But first a word or two about the changes mentioned under b).

## 1.2 Collective effects. Evolution of needs.

The increasing concern with protection of nature and the environment has stimulated interest in studying effects of economic activities on the structure of needs. These effects may perhaps be divided into two groups.

In the one group, we find those effects that a person so to speak gets into the bargain when he makes choices within his own field of choice, that is to say, unintended effects caused by many people doing something *at the same time*, but independently of one another. We could perhaps quibble at the term unintended, since suitable collective actions could have taken such side effects into account, and the omission of doing so is a kind of passive decision. But such a way of thinking seems far fetched.

The second group is caused by human activities, but arrives afterwards, and slowly. We can find many instances showing that a certain evolution of needs is seen as natural. When for instance, someone refers to the “hard thirties” and preach gratitude for the present affluence, others will find the comparison silly. “You cannot expect people to think like that today”, “the conditions are not comparable” etc. And why are they not? The reason, many would say, is that the present structure of preferences has been shaped by the individual’s lived experiences and by a gradual influence of the social environment; the preference structure of an individual today is in part a product of his history.

If we want to do more than just register that “conditions may change”, we must seek for some pattern in the changes, a theory that explains them. It seems reasonable to imagine that the structure of needs does not change, but that it is necessary to make the number and nature of the variables in it more complete. Indeed, it is not difficult to think of possible generalisations of the set of variables in preference functions that make natural and comprehensible the kind of changes described above.<sup>1</sup> If we want to draw such conclusions as “people are better off than they were before”, we have to be able to parameterise changes in needs. The problem may be partly one of philosophy. But it can also be a challenge to econometric cunning and efforts.

Why should we distinguish between those changes in needs discussed above, and those classified under c)? I suggest the following reason: Those changes in needs just considered, do not necessarily create big difficulties

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<sup>1</sup>See for instance my article ‘Some Observations on Welfare and Economic Growth’ in *Induction Growth and Trade, Essays in Honour of Sir Roy Harrod*, Oxford 1970: 65–75.

when it comes to explaining behaviour, but makes it extremely difficult to evaluate the effects on welfare. But those changes in needs that are “produced” raise the question of how to explain behaviour, not just evaluating its consequences. The standard problem, which has been widely researched, is the effects on behaviour of advertising or other activities aimed at influencing opinions. It seems to be a common and also reasonable assumption that changes in needs “produced” in this way will become more important, and measurably so, as society grows richer. The explanatory power of good old fashioned theories of economic behaviour may then be weakened. Well known authors such as J. K. Galbraith have done much to emphasise this problem.

I feel that, if economists want to participate in debates about these questions, it will to some extent become necessary to invade territory that has hitherto been classified as non-economic. It is tempting to try whether those analytic tools we already possess can be made useful, after some polishing.

### **1.3 Moral codes, “facade preferences” and “real” needs**

As a rule, it is easier to create chaos among concepts than to tidy them up again. All the same, let us be brave. Some examples, not too farfetched, of complicated circumstances may increase the wish to tidy.

Take first an old acquaintance, the lawnmower man, the one who would rather enjoy his beer in the long grass than drive the hated machine. Why does he toil? He is surrounded by neighbours with manicured lawns; but some of these neighbours may well have had the same disgraceful wish as he. Who then carries the burden of guilt for this sad state of affairs? Some say the producer of lawnmowers, which may be unfair. Many owners of gardens may take real pleasure in cutting their grass, without any intention of inflicting moral pressure on their neighbour. Or some busybody may see the possibility of obtaining a position on the parish council by starting a movement of garden owners. In both these cases, the producer of lawnmowers may well have contributed to easing the burden.

Some of you perhaps recognise the following situation from the gift carousel of the present day. The receiver of a gift, expresses (some times quite honestly) great pleasure and says: “I could never have afforded to buy something so exquisite myself.” If the giver is an economist given to teasing, he or she may then remark that a gift of cash might have given even more pleasure. But no, the receiver would then have felt forced to buy something more useful.

Let us now leave the petty every day problems. Say some people start a heavy campaign in favour of development aid. (An analysis of their preference

structure is another matter.) It is no secret that private opinions in such a matter may be diverse. Some will rejoice at the occasion to do something they have long wanted. Others will express themselves differently, at least privately. In this case, what will the number of contributors tell us about their “real” preferences?

Now take the man who goes to sleep while attending a benefit classical concert. Why did he go? Some would say “his wife made him”. Others might maintain that this is a complicated psychological problem. But it may simply be the case that an important man cannot afford not to attend. It is questionable whether our friend feels that the construction committee of the town’s new concert hall have spread joy. To make the case even more complicated, let us imagine that our friend was a member of that same committee.

Perhaps I should not have confined myself to slightly humorous examples. In order to stress the importance of a serious analysis, we might equally well have found more drastic examples of strong social pressure, moral or religious. Our problem here is in any case the more neutral one of trying to find a set of concepts for analysing the kind of situations described above.

Let us start with the concept of a conventional preference or utility function, as used by economists in the ordinary theory of consumer demand. Let

$$u^*(x_1, \dots, x_n) \tag{1}$$

be such a function, where

$$x_1, \dots, x_n$$

represent quantities of various things that are the objects of the choices and assessments of the individual. These variables may be goods and services in the conventional sense, use of labour for various purposes, employment of disposable time etc. The preferences represented by (1) are specific to the person in question.

Now assume that our person “changes his mind”. There may be diverse reasons for the change, for instance such as are illustrated above. A formal representation of the change may be

$$u^{**}(x_1, \dots, x_n) \tag{2}$$

where  $u^{**}$  is a function different from  $u^*$ . It is of course unpleasant for research seeking regular laws of behaviour in the choices of our person if such changes have great impact, and if they happen often and unpredictably. The

situation improves somewhat if preferences change according to a certain pattern. Maybe  $u^*$  and  $u^{**}$  both belong to a common class of functions

$$u(x_1, \dots, x_n; \alpha_1, \dots, \alpha_h) \quad (3)$$

where each member of the class is given by specific values of the parameters  $\alpha$ . In that case,  $\alpha_1^*, \dots, \alpha_n^*$  imply  $u^*$  while  $\alpha_1^{**}, \dots, \alpha_n^{**}$  imply  $u^{**}$ . If the  $\alpha$ s represent something that may be changed by other persons or groups in society, we may say that it is possible to change the opinions of our person. However, so far we have merely translated ignorance into a new language. In order to progress further, we need to ask what the  $\alpha$ s represent, and how they influence the function.

Lancaster has developed an interesting idea of how to transform the structure of needs to something more constant.<sup>2</sup> The idea is to remove the  $\alpha$ s from the preference function (3), and place them in human activities to satisfy needs. Furthermore, the structure of human needs is both autonomous and stable when we realise that the variables of preference functions are more fundamental than the numbers of pounds of cheese, of pairs of shoes per year etc.. The “real” variables of a preference function are such things as nutritive value, food enjoyment, entertainment, cultural level, respect etc. It is imagined that these variables characterising satisfaction of needs are quantitatively measurable. Let  $X_1, \dots, X_n$  be a complete set of such variables, and let the fundamental and constant structure of needs then be:

$$U(X_1, \dots, X_m) \quad (4)$$

For our lawnmower man, say, one  $X$  might stand for the joy of having a garden, another  $X$  for the respect of his neighbours (or the amount of unpleasantness avoided) etc.

The preference structure expressed by (4) represents the innermost nature of a person, and cannot be directly observed by others. On the contrary, various activities engaged in to obtain certain values of the  $X$ s can easily be observed. It is easy to see whether a man mows his lawn or lounges in the grass. But the reason *why* he acts as he does is his own secret.

Let  $y_1, \dots, y_n$  be quantitative measures for  $n$  different activities, perhaps a very great number, influencing the  $X$ s of his  $U$  function. Indeed, his  $X$ s are produced by these activities. There exist production functions such as:

$$X_i = g_i(y_1, \dots, y_n; \beta_1, \dots, \beta_k) \quad (5)$$

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<sup>2</sup>Kelvin. J. Lancaster (1966), ‘A New Approach to Consumer Theory’, *The Journal of Political Economy*, Vol 74: 132–157

We will return to the  $\beta$ s below.

The variables  $y_1, \dots, y_n$  are assumed to be subject to decisions with the purpose of maximising the function  $U$ . They do not all necessarily affect a specific variable  $X$ . Furthermore, maximising  $U$  may entail that some  $y$  activities are not activated at all. This last will depend, not only on the role the  $y$ s have in the  $g$  functions, but also on which *constraints* there are on the choice of them. Some activities consist in earning wages, and thus influencing an  $X$  that stands for disutility of labour; others may consist in buying things. In the last case, there will obviously be an ordinary budget constraint. Some  $y$ s may demand time, thus leaving less time for other pursuits.

Now assume that we insert the transformations (5) into the  $U$  function. Then, if a given set of  $X$  values corresponds to a given set of  $y$ s, the individual will in principle be able to state that they prefer one set of  $y$  values to another. If an individual has chosen one set of  $y$ s – subject to suitable constraints – that maximises his  $U$ , these values of the  $y$ s represent a kind of revealed preferences in visible activities. A term for these outward signs of taste and opinions might be “facade preferences”. However, these facade preferences are a mixture of the “real” preferences on the one hand and the technical and other possibilities represented by the functions  $g$  in (5).

Here, we come across an interesting problem of identification. Let one  $X$  stand for real love of music, another for the degree of esteem enjoyed in local society. Even if the  $g$  functions as well as the constraints on the  $y$  activities of a certain person were known to others, it would not be possible to deduce from his behaviour whether he goes to a concert from love of music or to be seen.

More importantly, it is unreasonable to suppose that the  $g$  functions are objective and stable relations, alike for all persons and known by all. The individual may well have an idea about the effects of different values of the  $y$  activities, especially regarding the more fundamental needs for food, shelter etc. But regarding more complicated needs, such as one’s reputation, most people will wish to know what other people think are the effects of  $y$  activities. It is possible that certain *norms* may arise concerning how the individual “ought” to experience the  $g$  functions. It is then clear that the maximal value of  $U$  an individual is able to obtain will depend on the shape of his perceived  $g$  functions in addition to his preferences and available resources.

We shall now study how it may be possible to change people’s observable behaviour by actively influencing their perceived  $g$  functions. The possibility of directly influencing the  $U$  function is not thereby excluded. But some interesting questions may be studied even when restricting ourselves to the influence on  $g$  functions.

## 1.4 On the possibility of producing and marketing facade needs

The shape of the  $g$  functions may change spontaneously. But it is also possible that certain groups or organisations systematically act to change them; it is this last kind of change that will be discussed in the following.

Formally, there are two necessary conditions for such efforts to influence to take place. Firstly, there must be groups or organisations that *wish* to create an influence. Secondly, such influence must be *possible*.

The wish to influence the behaviour of others may be deeply anchored in the preferences of the group in question. Besides, they may assume, with or without reason, that other people are in error. Activists may observe other people's "facade preferences", believe that these people have the same needs as themselves, but that they do not know what is good for them, that is, their "true"  $g$  functions. But there may also be business related reasons, when it may be profitable for the activists to change other's behaviour. This may formally be perceived as if the  $g$  functions of the activists become more favourable as if by an inventor's gains. But a more important result might be creating more favourable constraints on the choices of the activists.

The most obvious example is that of a group obtaining larger incomes by influencing demand. But the gain may also lie in increased power. A  $y$  activity to this purpose may be hindered by the activities of others. It may be a profitable detour to invest in uniformity in order that future efforts to increase power become more effective.

It is not easy to find acceptable explanations of how it is possible to influence other people. The easiest way is of course to appeal to the existing skewed distribution of power in society, the fact that a few for various reasons have power over the many. It is far outside our powers to here give an analysis of what power is, and how it is created. Let us just point out the following: It is in no way obvious that power is effective in influencing people's  $g$  functions. Traditionally, the influence of power lies in control of the constraints limiting choice of  $y$  activities. Some simple examples of constraints are the wages of labour and prices of commodities that together decide the relationship between work effort and purchasing power. In other words: a person may be well aware of the effects of various  $y$  activities, even though he does not have a free choice between them.

The possibility of influencing a person's  $g$  functions is probably connected to the widespread will to, or rather necessity of, listening to other people rather than finding out for oneself. In modern society, relevant  $g$  functions must appear to the individual like a complicated set of relationships with an enormous quantity of variables, namely possible activities  $y$ . As an example,

take such a complicated matter as cultural needs. A person may have an inner need for “real” cultural satisfaction, and in that case perhaps know which activities suit his purpose. (Although who can say what is given by nature and what is acquired learning in this field?) But on the other hand, take the man whose main concern is what others think about his level of culture. It is both usual and natural that he seeks advice.

The advice might lead him to realise, or believe he has realised, the effectiveness of some  $y$  activities that he was ignorant of. It might also persuade him that activities which he trusted to be effective (and perhaps cheap), are in effect not reliable, and that other (and perhaps more expensive) activities work better.

What if competing groups try to influence people’s  $g$  functions in different ways? Will the result be confusion, or a sensible average conception of how people should behave? Both results are possible, but there are reasons to believe that the total result will be biased in the following sense: The individual will need some kind of proof that the information he receives is correct. He may sometimes be able to find out for himself. But for more elaborate categories of needs, it will be natural to regard as a proof the observation that many others have arrived at the same conclusion. So, influences are most effective when they concern  $y$  activities that are easily visible to others. (cf the expression: such and such activities are in). And, by the way, the implication might be that there are economies of scale in producing influence.

Perhaps the  $g$  functions of the typical person, the man in the street, can be simplified to a parametric class of functions. This possibility was the reason for introducing the parameters  $\beta$  in (5). The influences discussed above would then mean effecting changes in the parameters  $\beta$ . Inserting the transformations (5) in the needs structure (4) would then give a parametric class of “facade preferences”, and influencing the  $\beta$ s could be conceived of as influencing these preferences. If the above reasoning is accepted, an ensuing and very intricate question would be: what is the final effect on the person influenced? Will his optimised  $U$  increase, decrease or stay unchanged? We will try some speculation on this theme.

## 1.5 The effect on utility of influence

The general question of whether a person would have been happier with different preferences is perhaps too formidable for a dry analytical treatment. But within the simplified analytic model presented above it may be possible to speculate a little without being led too far astray.

Assume a person has an unchanging utility function of the kind presented in (4). The optimal value of this  $U$  function will depend firstly on the shape



of the  $g$  functions in (5) and secondly on the exogenously given constraints on the  $y$  activities. Let us first study possible effects of changes in the  $g$  functions.

In principle, the  $g$  functions should be a sort of technical data when maximising the  $U$  function. But in reality, as discussed above, in order to gain knowledge about them, we have to a great degree to rely on other people. I have suggested that there exist influential groups that wish and are able to decide on norms for correct behaviour. When constraints on  $y$  activities are given, it is obvious that the  $g$  functions can be changed to give both lower and higher values of  $U$ . Take as example the husband who incessantly sees the question “When did you last visit a jeweller?” And assume his wife, too, is aware of public opinion. If there is an  $X$  representing family harmony, it may well diminish in the absence of a the  $y$  activity represented by a visit to the jeweller. On the other hand, the purchase of a bracelet or ring will entail constraints on other activities, and thus decrease other  $X$ s in the  $U$  function. Was the previous state of affairs due to insufficient information, or perhaps blissful ignorance?

Assume more generally that a person’s  $U$  function contains certain variables  $X$  that he feels should have high values, and that initially the corresponding activities are relatively cheap. Assume also that the point of these needs are that they should be visible to other people. If new and perhaps more expensive activities for their satisfaction are created, an unchanged “status” will demand more resources. Of course, the opposite may happen: something silly and expensive may go out of fashion, and free resources for other purposes.

Many people claim that, in modern society, persons care less about private “inner” satisfaction of needs, and care more for what others think about their way of life. The foregoing analysis indicates that something else may have happened. Say that external influences make more demanding and expensive the  $y$  activities necessary to satisfy needs where the opinion of others are important. Then a reduction in those activities that satisfy more private needs may simply be a substitution effect due to changes in the  $g$  functions, and not necessarily a more basic change in the shape of the  $U$  function itself.

Now say that advertising and other external influences systematically change people’s beliefs about their  $g$  functions, and that the maximum attainable value of the  $U$  function thereby is reduced. Is then loss of utility certain? We will answer no. Collective repercussions might improve the *constraints* on a person’s possible  $y$  activities. Consider people’s pattern of consumption in a more narrow economic sense, and their ability to earn an income. The possibility of creating a certain degree of conformity among consumers may lead to economies of scale in mass production, and so higher

wages and profits. It might even be possible to rationalise the production of more extramundane values in this way. As a drastic conclusion, it is tempting to turn on its head the whole modern mania for efficiency and growth and say: We should learn to value something that can be produced cheaply in large quantities, thus shifting the constraints on growth and progress.

## 2 Tolerance or balance of power?

### 2.1 Some reflections on opposition groups and their options

The emergence of opposition groups, their fields of activity, their struggle, their victories or defeats, make up important chapters in the history of most societies. Their number is surely enormous. Many people claim that there are more such activities now than formerly. While this claim may be debatable, there are surely no signs of stagnation.

The causes oppositional groups associate themselves with, vary greatly, as does the intensity of their activities. There may be all degrees of intensity, from scarcely noticeable deviations to fights to the death. It is therefore natural to ask what such groups have in common. I shall limit myself to the following simple reflections, on which the following analysis will be based.

1) A necessary condition for an opposition group to exist is the existence of an adversary that in a relevant sense is *larger* and *stronger* than the group itself.

2) I shall assume that the activity of an oppositional group is *unwanted* by the stronger adversary. Hence, I shall exclude what we could call an “invited” opposition, even though there may not be a clear distinction here.

In this context, I shall interpret the concept of tolerance as a characteristic of the actions of the dominant adversary. I know, of course, that many use the concept in a wider sense, to include the responses of an equal or even weaker adversary. But such situations raises questions which I shall not discuss here.

We can now sketch a question that many perhaps have pondered on, namely: How can an oppositional group survive if it vexes an adversary who is stronger and presumably has the power to suppress the unwanted activity? I have heard many different answers to this question, and shall loosely sketch some of them.

Most people would perhaps say that there is no mystery. It is a question of absolute values, and a matter of course in what we call civilisation. Honourable behaviour, or playing the game if you like, implies not attacking the weaker party. People who doubt this obvious principle also have the possibility of taking into account rewards or punishment in the other world.

This kind of explanation cannot be universally valid. Obviously, what matters is not only that the oppositional group is weak, but what its activities are. The distance between disliking the activities of the opposition and justifying oppressive measures, is often not that great. The above mentioned universal ethical principle might then, in the worst case, degenerate to toler-

ating those oppositional groups that one does not mind anyway. In practice, we seem to have a middle way, which might indicate that the principle is not such a matter of cause as many seem to believe.

The ethical and moral principle in its finest version is often connected to the idea of genuinely unselfish feeling for others. But a more hedonistically based behaviour might easily lead to the same visible result, thus generating a sort of problem of identification. The self-interest of the stronger party might for instance be something as difficult to quantify as the unpleasantness of living in a society with draconian laws. Or it might consist in something as prosaic as calculating that the cost of suppressing the opposition would be greater than the vexations it is able to create. More dynamic effects might also count, as for instance that the oppression of an oppositional group could have “feed-back” effects, making it probable that the group could strike more terribly back.

A second explanation that lies near at hand, but is not a part of the present analysis, is this: the stronger party may have its power delegated from an even stronger group. Before acting against a minority, the majority must consider how far their delegated powers reach. But this situation, too, falls outside the present analysis, since it would then not be clear in what sense the opposition really is the weaker party.

A variant of the latter situation is when a group, small in itself, can enter into coalitions, and so be capable of demanding concessions. I shall also avoid discussing this important case, as there is not then a single opposition group to be addressed.

There is an enormous literature treating the kind of relationships discussed above. Our short summary hardly covers the existing social philosophy on the subject. But it may be sufficient as a background for the following attempt: we will investigate whether well known principles of the theory of choice as known by economists can illuminate, or simulate, some of the relations we can observe between oppositional groups and their stronger adversary.

## 2.2 A model of static equilibrium

It should not be necessary to state that the following model will be a very simplified one, including just a few of the many elements belonging to the subject treated.

We shall study a society where there is a conflict between two groups. One group, presumably the stronger one we shall call the *regime*. The other group is the *opposition*. We shall not touch on the reasons for the conflict. Also, there may be many different conflicts in a society concerning many

causes and many groups simultaneously; therefore the following will be a partial analysis with corresponding weaknesses.

The imagined conflict can be briefly sketched in the following way. The regime will be assumed to defend a certain social system, the established one. The opposition will be assumed to attempt to contest the existing society. We shall not discuss what their alternative system is.

Two main factors are assumed to influence the preferences of the regime. One is the amount of damage done by the opposition, the other is the amount of prohibitions, punishment, and lawmaking that may be introduced to keep them at bay. Both these factors are assumed to be disliked by the regime. The opposition does its best to be resistant to the regime, but dislikes receiving disciplinary measures and punishment.

Now to study the way of thinking of the two parties. We start with the way of thinking of the regime, their “preferences”. Let  $x$  be an index of the amount of damage the opposition inflicts on the regime. Furthermore, let  $\alpha$  be a parameter that measures the amount of restrictions imposed on the opposition by the regime. We will explain later on how this parameter enters the model. For now, it is assumed that for the regime, the smaller both  $x$  and  $\alpha$  the better. The preferences of the regime can be represented by the function:

$$U(x, \alpha) \tag{6}$$

This function, (and others similar to it used in the following analysis) may not be continuous and differentiable. But assuming it does possess partial derivatives, the above assumptions imply that  $\frac{\partial U}{\partial x} < 0$  and  $\frac{\partial U}{\partial \alpha} < 0$ .

Now let  $x^0, \alpha^0$  denote a given situation (e. g. present state of affairs). And let  $x', \alpha'$  denote one alternative while  $x'', \alpha''$  denotes another alternative. Assume that  $x'' > x^0 > x'$  and that  $\alpha'' < \alpha^0 < \alpha'$ . The corresponding values  $U$ , written  $U'', U^0, U'$  may all be different, two may be equal or all three may be equal. Let us now see what this can mean translated to ordinary language. Assume for instance that  $x''$  is large in relation to  $x^0$  while  $\alpha''$  is small in relation to  $\alpha^0$ . At the same time,  $U'' > U^0$ . Would this imply that the regime is prepared to show greater tolerance than in  $x^0, \alpha^0$ ? And would the opposite be the case if  $x'$  is much smaller than  $x^0$  while  $\alpha'$  is much larger than  $\alpha^0$  and  $U' > U^0$ . I think not necessarily. One must distinguish between, on the one hand, the magnitude of the differences between the  $x$ s and  $\alpha$ s, and on the other the *intensity* of the changes in the  $U$  function of the regime. The fact that one regime prefers a large  $x$  and a small  $\alpha$  to a small  $x$  and large  $\alpha$  while another regime has the opposite preference, does not necessarily imply that there is any significant difference between the two

regimes. The level of the  $U$  functions may make both regimes as good as indifferent to the two situations.

Let us imagine some convention giving an absolute scale for the function  $U$ . Then, the value of  $U$  would simulate the strength of the regime's preoccupation with various situations  $x, \alpha$ . A small  $U$  over the relevant  $(x, \alpha)$  field signifies indifference, perhaps cynicism, while a large  $U$  means that both  $x$  and  $\alpha$  are important to the regime. Specifically, we may have the following situation: A regime may want almost fanatically to avoid subversive  $x$  activities against the system while at the same time feeling strong horror against a harsh system of punishment  $\alpha$ . The final choice will depend on the nature and energy of the opposition. We shall return to this last.

We can also describe the features above in another way. Assume the  $U$  function to have first order partial derivatives. Assign to  $U(x, \alpha)$  a constant value  $c$ . Then

$$\frac{dx}{d\alpha} \quad (U = c) \tag{7}$$

represents the degree of substitution between  $x$  and  $\alpha$ , that is, how much less  $x$  would be necessary to outweigh the discomfort of an increased  $\alpha$ . But we also have:

$$\frac{dx}{d\alpha} = -\frac{\partial U/\partial\alpha}{\partial U/\partial x} \quad (U = c) \tag{8}$$

We see that e.g. a doubling of the scale of  $U$  does not change the rate of substitution. In concrete situations, where the regime is evaluated from moral or ethic considerations, the evaluation may in some cases address the more visible rate of substitution to the left in (8), in other cases the magnitude of numerator and denominator in (8) separately.

Now consider the preference structure of the opposition. Assume that the amount of punishment and other disciplinary measures carried out against the opposition can be represented by a variable  $y$ . It is natural to imagine that the opposition will have a preference function,

$$V(x, y) \tag{9}$$

where the concrete situation determines its form. As mentioned above, it is assumed that  $x$  has a positive effect on  $V$ , while  $y$  has a negative effect. In other words, if  $V$  is differentiable,  $\frac{\partial V}{\partial x} > 0$  and  $\frac{\partial V}{\partial y} < 0$ .

The function  $V$  and what it represents may be discussed in a fashion similar to the function  $U$ . Thus, strong enthusiasm for  $x$  together with

strong aversion to  $y$  can imply that large  $x$  combined with large  $y$  may be nearly equivalent to a small  $x$  and small  $y$ . On the other hand, compare different kinds of opposition with different aims but where  $y$  is a standard measure for punitive measures. Then the importance of  $x$  might vary with the kind of means attempted, while  $y$  would count for the same.

We shall now discuss the possible behaviour of the parties. The regime is the stronger part, and decides on the system of punishments,  $\alpha$ . We assume that there is a rule of law in the sense that the system  $\alpha$  is publicly known. This can be expressed by assuming a punishment function of the type

$$y = g(x, \alpha) \tag{10}$$

In order obtain a simple illustration of the principle, we shall in the following assume that (10) takes the form:

$$y = \alpha x \quad x \geq 0 \quad \alpha \geq 0 \tag{11}$$

Let us first consider how the *opposition* might react when confronted by the constraint (11). It seems reasonable to assume that they will attempt to maximise  $V(x, y)$  in (9) under the constraint (11). If there are no other constraints and a maximum exists, the maximisation will lead to the following “optimal” reaction from the opposition:

$$x = f_1(\alpha) \tag{12}$$

$$y = f_2(\alpha) \tag{13}$$

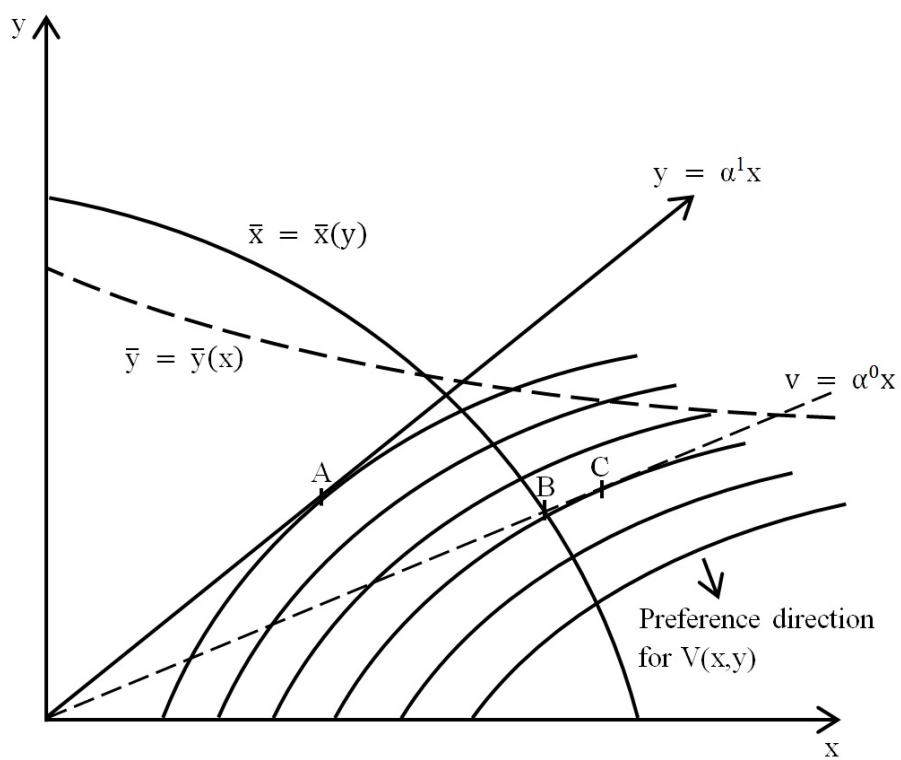
The effect of  $\alpha$  on  $x$  and  $y$  is a complicated matter to analyse. If we could understand  $\alpha$  as the price of  $x$  it might be reasonable to assume that  $x$  will decrease as  $\alpha$  increases, while the effect on  $y$  is more uncertain.

It is, however, far from certain that a maximum will exist, or exist for reasonable magnitudes of  $x$  and  $y$ . The question of further constraints then becomes important. It seems reasonable to assume that the opposition does not have an unlimited capacity to exercise  $x$  activities. It seems reasonable, furthermore, to assume that this capacity is not constant, but depends inter alia on  $y$  (for instance, on how many of the opposition who are imprisoned). Suppose therefore that the capacity,  $\bar{x}$ , is given by the function:

$$x \leq \bar{x} = \bar{x}(y) \tag{14}$$

-

Figure 1:





The situation is sketched in figure 1. From the point of view of the opposition, there are two optima, A or B in figure 1.

The function  $V$  may have a shape that implies possible solutions of type A for some values only of  $\alpha$ , or perhaps for none. (For example, in the figure A is not a possible solution.) Or it may preclude solutions of type B. Or the situation may be as in figure 1, where some values of  $\alpha$  give the solution A while others imply B. The interpretation may be that in situations like A the parameter of punitive reaction  $\alpha$  is the deterrent, while in situations like B, the deterrent is the punishment itself.

We also see that both in situations A and B,  $x$  and  $y$  are still functions of  $\alpha$  only. However, both these functions may be more complicated than (12) and (13).

We will now study possible behaviour of the *regime*. Its evaluations are represented by  $U$  in (6), and the regime chooses  $\alpha$  so as to maximise  $U$ . (Perhaps we should have said minimise  $(-U)$ , since  $U$  may be thought to represent sorrow rather than joy, but that is a quibble.)

Let us assume, at least at first, that the regime is fully cognizant of the opposition's pattern of reactions; it knows all about figure 1. The problem of the regime then is *to find a point of type A or B in this figure which maximises  $U(x, \alpha)$* . If one and only one such point exists, there exists a stable static equilibrium in the struggle between the two parties. Otherwise, it may be necessary to include further constraints to obtain a unique solution. We will leave aside such complications, since our analysis in any case is meant merely as an illustration.

We shall, however, extend the theory of the regime's behaviour by including possible constraints on  $y$  from the point of view of the regime. (Concretely: limited capacity of prisons.) Such a constraint is represented by the line  $\bar{y} = \bar{y}(x)$  in figure 1. It is imagined that the amount of resistance activity  $x$ , influences capacity. For some values of  $\alpha$  this constraint could be effective, and be the locus of the solution.

One conclusion seems clear, even in this simple equilibrium model: There is no simple connection between, on the one hand, the visible difference between two equilibria, that is to say, two different sets of values of  $(\alpha, x, y)$ , and on the other hand the difference in degree of matters like cynicism, immorality, effort, will to oppress etc. Usually, it is said that in order to appraise the parties in a conflict, we must consider their "motives". Often we then imagine an absolute scale ranking opinions according to their moral, ethical or perhaps rational quality. But such norms are not always universally acknowledged. Therefore, it is easy to imagine for instance the following situation: Take two different societies. In one, we have a regime and an opposition. In the other, the regime is ideologically agreed with the opposition in the first

society, while the opposition agrees with the regime in the first society. In a model such as described above, it is easy to imagine that each society is in equilibrium with a large  $y$ , but on opposite premisses. Both societies would then be able to accuse the other of imprisoning “freedom fighters”.

### 2.3 The importance of conjectural elements

The above model was based on rather strong assumptions, in particular that each of the parties possessed perfect information. It was also based on particular, and perhaps somewhat naive, rules of the game, which each party kept to. One rule was that the opposition took as a given the function of punishment,  $\alpha$ , fixed by the regime. The other rule was that the regime could count on the opposition adopting the optimal activity for a given  $\alpha$ . In this connection two important questions could be asked. Firstly, the effects of less than perfect information, and secondly, whether each party could use bluff to influence the activity of the other.

It is a simple task to understand the impact of missing information. The only information the opposition needs, is the punishment function. The behaviour of the regime depends on the reaction of the opposition to a given  $\alpha$ . This reaction can be quite complicated. But even if the regime does not have full information, it will have no difficulty in charting the reactions of the opposition by experimenting. So, in the model sketched, a process of learning will, more or less quickly, lead to the described equilibrium.

The use of bluff leads to a more complicated problem. It can happen in one or both of two ways. One way is to show behaviour which is contrary to the optimal one, given the constraints, in order to confuse the enemy. The other, and more usual way, is for one party to announce what it will do *if* the other party behaves in a particular fashion. The first method may be costly in the sense that it leads to a worse result for  $U$  or  $V$  than if the bluff had not been attempted. If the party in question subsequently changes its behaviour, it risks discovery. A threat is at first less costly and in the second round probably easier to play down if the bluff does not succeed.

Let us consider more closely how either side could bluff. For the regime, there is the parameter  $\alpha$ . Even though it has been assumed to be known, the regime may threaten to increase  $\alpha$  as a consequence of some  $x$  activity. It might have difficulty in making the threat credible if the capacity of  $y$  was nearly filled, and if this were known. The bluff of the opposition would in the first place be to announce increased  $x$  activity unless the punishment parameter  $\alpha$  were reduced, or to meet a threat of increased  $\alpha$ . The opposition would also be able to bluff about their capacity for  $x$  activities since this cannot easily be known to the regime.

The regime will probably find bluffing difficult, particularly if it is well established, and is very powerful relative to the opposition. Such a regime could not very well retreat from a threat, since the retreat might shake its established position. Therefore, the opposition must count on threats from the regime being effective. The opposition probably has a greater scope for bluffing. Or rather, the opposition can probably try bluffing without too terrible consequences if the attempt is unsuccessful. Being the weaker party, the opposition faces less danger of losing prestige.

Formally, it is a simple task to change the foregoing model of static equilibrium into an equilibrium model based on the kind of conjectural elements sketched above. It could be done as follows: Let us assume that society is in a certain state  $x, y, \alpha$ , and that the parties have certain expectations as to how the opposing group will react to a certain change in behaviour. We can then imagine two cases. One very special and simple case is that both parties have conjectures about the opposing party that makes it optimal to retain the status quo, implying equilibrium. The situation is more complicated if one or both parties have conjectures about the opposing party that makes a change of behaviour seem favourable. A new situation will then arise. At the same time, both parties will have acquired information about the reaction of the opposing party, giving a basis for new conjectures. Without detailed information about the case in question, it is difficult to find out how this process will develop. Therefore, in a situation where both parties make use of bluff, the question of an equilibrium with a balance of power will become very complex. It is perhaps reasonable to assume that this will occur when the regime is relatively weak, making both parties inclined to think the other can be influenced by bluff. If, on the other hand, the regime does not bluff, the opposition will have to show in action that its threats are seriously meant, which can become costly as described above.

In general, then, one could perhaps claim that conjectural elements will be of particular importance in societies that are unstable in the sense that there is an almost even balance of power between regime and opposition.

## 2.4 Dynamic factors. The question of stability

It seems natural to try to make the model more realistic by introducing dynamic elements. Ideally, if it were possible to create a complete and fairly "correct" dynamic model, the static model discussed above would describe the special case of a stationary condition. Only when this relationship exists between the dynamic and the static model is it possible to compare them, and for instance claim that the dynamic version is more general and hence more realistic than the static one. It is, of course, not the case that every

dynamic model is better than every static model. However, in the case we have tried to analyse, there are good reasons to think in terms of dynamics. It is natural to imagine that something will *happen* in the course of time. The struggle between the two parties must in some way or another have an *outcome*. The outcome might be a kind of war of attrition, which can be simulated by the sort of static model analysed above. But it might be more natural to imagine the outcome as a more radical rupture, a change in the very structure which is the basis of the conflict between the parties. But in this case there are so many possibilities and so many complications that we will not even consider trying for a general model. We shall limit ourselves to sketching some possible features of a dynamic model. In particular, the analysis will be limited to situations where the opposition is by far the weaker party, at least initially. This assumption was also made in our static analysis.

We shall discuss two kinds of dynamic elements. One concerns possible changes over time in the number of adherents of the two parties. One could also consider other measures of the power of each party, for instance the amount of money or other resources possessed by each group. This analysis could start with assuming autonomous changes in the number of adherents, and then simply study the consequences for the course of the conflict. One could also make the model more complete by considering the changes in the number of adherents as endogenous variables determined by feedbacks from the conflict.

The second and more general kind of dynamic elements to be considered, we will term cumulative effects. We here have in mind the gradual influence the activities of the two parties may have on their willingness and ability to continue the conflict. It may, of course, be the case that the first type of dynamic elements turns out to be a special case of the second.

We shall first consider changes in the size of the two groups, and limit ourselves to define size as the number of adherents. Furthermore, the analysis will be limited to the case where the total number of adherents is constant, so that an increase of adherents of one group implies a decrease for the other. Let the total number of persons in the groups be  $N$ , a constant, and let  $n(t)$  be the number belonging to the opposition at time  $t$ . The symbols  $x$  and  $y$  have the same meaning as before, but will now be computed per person in each group. Since they can vary over time, they will be denoted  $x(t)$  and  $y(t)$ . We define:

$$X(t) = n(t)x(t) \tag{15}$$

$$Y(t) = n(t)y(t) \tag{16}$$

Because the sizes of the two groups are not constant, we have to resolve

certain problems of scale, for the punishment function as well as for the two preference functions.

Concerning the punishment function, it still relates to each *single member* of the opposition. We therefore keep the form

$$y(t) = \alpha(t)x(t) \quad (17)$$

or its equivalent

$$Y(t) = \alpha(t)X(t) \quad (18)$$

For the time being, we shall retain the preference functions  $U$  and  $V$ , writing them as

$$U(X(t), \alpha(t)) \quad (19)$$

$$V(X(t), n(0)y(t)) \quad (20)$$

where  $n(0)$  is the constant number of adherents of the opposition in the static model.

The preference function (20) shows that the *average punishment per adherent* is weighed against the *total* activity  $X(t)$ .

We shall also retain the constraints, and assume that they have the same properties as before except for effects of variable group sizes:

$$X(t) \leq \bar{X}(Y(t), n(t)) \quad (21)$$

$$Y(t) \leq \bar{Y}(X(t), N - n(t)) \quad (22)$$

It seems reasonable to assume that the partial effect on  $\bar{Y}$  of an increase in  $N - n(t)$  will be positive, as will the effect on  $\bar{X}$  of an increase in  $n(t)$ . (For a given  $Y(t)$ , the greater  $n(t)$ , the more fighters at liberty).

It is now easy to suggest certain possible effects of an increasing function  $n(t)$ . They are loosely described below.

Firstly, we see that, as  $n(t)$  increases, the activity of the opposition will in a sense become cheaper; there are a kind of economies of scale. Assume namely that  $y(t)$  is constant while  $n(t)$  increases. Then, we see from (20) that  $X(t)$  may increase while  $y(t)$  does not, and so the function  $V$  increases. For a given value of  $\alpha$ , it then seems reasonable to assume that the opposition will tend to choose a greater  $X$  the larger  $n(t)$  is. Also, the larger  $n(t)$ , the more favourable the constraint  $\bar{X}$ , as seen from equation (21).

Regarding next the effects on the regime, the effects of increasing  $n(t)$  will be the reverse of the effects on the opposition, at least reasoning partially.

It will become more costly for the regime to stick to a given parameter of punishment,  $\alpha$ . Suppose, namely, that the opposition, for a given  $\alpha$ , chooses to increase  $X(t)$ . The function  $U$  will then decrease while  $Y(t)$  increases, making the constraint  $\bar{Y}$  more constricting.

The above remarks are merely suggestions of possible developments. Assuming that the functions  $U$  and  $V$  are maximised at all times, under the same conditions as in the static model, a given function  $n(t)$  will give dynamic model determining the development over time. It will depend on the detailed specification of the model whether there is a tendency to convergence, or to a development making it unreasonable to retain the assumptions of the system. It will probably be fairly complicated, perhaps also unfruitful, to analyse all possible cases without more concrete information than given above.

We shall now try to discuss possible cumulative effects. These will in the first place concern the preference functions  $U$  and  $V$ . Consider first gradual changes in the preferences of the regime. The activity  $X$  must presumably be directed partly towards preventing the activity of the regime, partly to influence its attitudes. It may therefore perhaps be natural to conceive that the strength of the regime's dislike of a certain level of activity  $X$  will depend on earlier experiences. There is for instance a possibility of habituation, in the sense that a certain level of activity  $X$  gradually becomes less annoying. The opposite development is of course also conceivable: the degree of annoyance or feeling of danger to the existence of the regime may be increasing. Another cumulative effect may affect the system of punishment characterised by the parameter  $\alpha$ . Here, too, there are several possibilities. One is that a certain level of  $\alpha$  is not sufficiently unpleasant until it has been practiced for a while. Or the opposite could be the case: a gradually increasing tolerance of restrictions and punishments as one gets used to applying them. Possibly, these effects might be better shown as cumulative effects of the actual level of punishments,  $Y$ .

Similar considerations as above could be made as regards possible cumulative effects on the preferences of the opposition. It is of course in no way certain that the effects on the two parties should always be contradictory. We may for instance imagine a kind of "battle fatigue" for both parties, or one party might become fatigued while the other became more eager. There are a series of different combinations that could be relevant in a concrete case.

An explicit summary of the above considerations of cumulative effects might be dynamic preference functions of the type:

$$U^*[X(t), \alpha(t); (N - n(t)), \int_{t_0}^t A(t, \tau)X(\tau)d\tau, \int_{t_0}^t B(t, \tau)Y(\tau)d\tau] \quad (23)$$

$$V^*[X(t), Y(t); n(t), \int_{t_0}^t a(t, \tau)X(\tau)d\tau, \int_{t_0}^t b(t, \tau)Y(\tau)d\tau] \quad (24)$$

Here,  $A, B, a, b$  suggest certain weights, for instance that new experiences have greater effects than older ones. Even though the previous functions  $U$  and  $V$  are replaced by the more general (23) and (24), it is still assumed that the only variable to be chosen by the regime is  $\alpha(t)$ , while the opposition choose  $X(t)$ .

A last daring step in this attempt at specification of a dynamic model, might be to make  $n(t)$  an endogenous variable, for instance by

$$\frac{dn(t)}{dt} = H[X(t), Y(t); n(t), \int_{t_0}^t h_1(t, \tau)X(\tau)d\tau, \int_{t_0}^t h_2(t, \tau)Y(\tau)d\tau] \quad (25)$$

where  $H$  is a given function, and  $h_1$  and  $h_2$  are certain weights.

The above system at least makes it possible to know the number of variables and the number of constraints, which must surely be equally important in this kind of analysis as in ordinary economic analysis.

Our soup is fairly thin as regards concrete content, but let us nonetheless try to say something about a possible outcome of the kind of conflict considered. Firstly, the dynamic model might conceivably have a stable stationary solution in the ordinary sense, which might be like the static model discussed above in part 2.2. There are, however, several other possibilities. The cumulative effects could result in the activity of the opposition dying out. Another possibility, to which it is easy to find concrete parallels, is that the  $X$  activity grows to become intolerable to the regime. This might for instance happen if the  $X$  activity has attained a level such that the punishment function  $Y$  reaches its capacity limit, while  $X$  keeps growing. Our model contains no such structural breakdown, we just append it, as it were, but it could be included in a potential extension of the model. We easily see that there are many different possibilities. One of them is an end of the conflict by introducing reforms; this possibility will be considered below.

## 2.5 Tackling conflict by means of reforms

Above, we have assumed given preference functions for the two parties in the conflict. We have discussed their dependence on various variables, but the shape itself we have taken as given. It is clear that this assumption can only be sensible if there are implicit ideas about the kind of parties confronting one another, what the conflict is about etc. We must expect the preference functions to depend on the concrete situation and on the background for the

conflict. In other words, there ought be some kind of subscript or index on the preference functions indicating the cause in question. It is perhaps most natural to interpret the implied background for the preference functions as follows. The regime stands for a social system that it wants to defend against all changes. The activities of the opposition will then be understood by the regime either as endangering the established structure or - which will have the same effect - leading to a structure which is different from what the regime would have wanted if left in peace.

It is also natural to imagine that the opposition wishes to achieve another social system where there would be no reason for opposition. On the other hand, it is not sure that the activities of the opposition has as their sole aim to change certain aspects of the regime's system in order to make it more similar to their own. It is possible that the aim of the  $X$  activities is to create more general difficulties for the regime in order to increase the possibility for the opposition to force their own alternative through.

The above considerations show that there are three different social systems: firstly the one principally advocated by the regime, secondly the one actually existing during the conflict and thirdly the one advocated by the opposition. Nonetheless, neither party considers any alternative to their preferred system. The situation could also be interpreted as follows: The regime's first optimisation of  $X$  and  $\alpha$  was enacted in accordance with the preference structure corresponding to "the existing state of affairs". Afterwards, we might imagine an alternative optimisation on the part of the regime, namely that which would prevail under the system favoured by the opposition, and where the variables  $X$  and  $\alpha$  are set to 0. The regime would then choose that of the two "optima" which seemed the better. We could imagine the opposition thinking in a similar way. The implication is that we hitherto reasoned as if, for both parties, accepting the alternative system would be far worse than the optimal choice in the existing situation of conflict.

A natural generalisation would be to imagine that there are a number of possible systems representing a gradual transition from the system of the regime to the system of the opposition. Assuming these systems could be ranked, so that the closer a system was to the principal views of one party, the farther from the principal views of the other, we might imagine the following representation of the preferences of the two parties.

Let  $S$  denote any possible social system, let  $S_0$  represent the preferred system of the regime in the absence of the nuisance of an opposition, and let  $S_m$  be the system preferred by the opposition. For simplicity, assume that between these two extremes there is a series of possible systems which can be ranked according to distance from  $S_0$  in the order  $S_0, S_1, S_2, \dots, S_m$ . Let



$u$  and  $v$  denote the preference functions of the regime and the opposition. Furthermore, let  $H_t$  denote the situation at time  $t$ , perhaps characterised by the complex of data after the semicolons in (23) and (24). The preference functions could then be specified as follows

$$u(S, X(t), \alpha(t); S_0, H_t) \tag{26}$$

$$v(X(t), Y(t); S, S_m, H_t) \tag{27}$$

As above, only the variables *before* the semicolon are subject to choice by the relevant party. The statement needs clarification in the case of  $S$ . We shall assume that the reigning official system (“the constitution”) is decided on by the *regime* and is a given datum for the opposition. The opposition will compare the reigning system with its own preferred system  $S_m$  and will make its choice of optimal  $X(t)$  and  $Y(t)$  accordingly, as described above.

The regime now has the possibility of reducing  $X(t)$  and  $\alpha(t)$  by modifying the system; the possibility will depend on the obstinacy of the opposition in relation to its primary preference of  $S_m$ .

An intuitively obvious conclusion follows. If the opposition takes as given the system chosen by the regime, and behaves accordingly, any equilibrium will have to lead to a system that is neither  $S_0$  nor  $S_m$  while the variables  $X$ ,  $Y$  and  $\alpha$  may not show any tendency to become zero or very small. In other words: reforms cannot be assumed to end the conflict. In order for the conflict to end, we must probably introduce another kind of strategic behaviour, one where conjectural elements enter as if in a bargaining situation. A suitable strategy might be of the following kind: Consider two of the possible systems, for instance  $S_i$  and  $S_j$ , where  $j > i$ . It is quite possible that the opposition would prefer  $S_j$  and  $X = 0$  to the system  $S_i$  combined with the corresponding optimal values of  $X$  and  $Y$ . Of course, the preference function  $V$  would take even higher values if the opposition could choose the levels of  $X$  and  $Y$  under the system  $S_j$ . However, the regime could make the introduction of system  $S_j$  conditional on the value of  $X$  being zero or very small, and otherwise stick to system,  $S_i$ . There are here clearly countless possibilities for a kind of complicated game of poker that we shall not try to discuss further.

## 2.6 Final remarks

Some people will presumably find that in the preceding analysis, we have tried to make a simple matter unnecessarily complicated. They may say that the existence of an opposition against a regime implies that there is something wrong with the regime, and that there is reason to blame the

regime for trying to suppress the activities of the opposition. Many might feel that it is meaningless or even improper to introduce the idea of cold blooded calculation in such a situation. Others might on the other hand claim that we have presented a complicated social condition in a way that is far too simplistic and superficial. They may assert that every human conflict is a distinct episode and needs to be treated as a concrete case in order to obtain a real understanding of what is going on. They will assert that the kind of situation we have tried to analyse often is so emotionally charged, and will give rise to so spontaneous reactions that it is vain to try to find a general pattern for the development of a conflict.

We are not prepared to mount a strong defence for what we have tried to do above, whether against the first or the second of the two kinds of argument referred to. One point we have tried to make, is that when trying to find the pattern of a conflict, we may come upon what in statistics is called a problem of identification. The picture of a conflict obtained by a neutral bystander can be described or simulated in a number of ways. Of course, the bystander may believe he has more information, and knows what is really going on. But what is believed to be information or insight may in reality contain rather many normative elements. There is no reason to criticise normative elements as such, either in researchers or others, but to *understand* is one thing, to *accept* is another. There are few fields where this distinction is greater, or should be more mercilessly upheld, than in conflict research.

## 3 Governing by the majority principle

### 3.1 The difference between individual and “collective” decision making

It seems to be usual, when these two ways of making decisions are discussed, to maintain that making decisions is always difficult, and that further difficulties appear when decisions are “collective”, because then there are often diverse opinions. Considerations of this last kind of problem are the background to analysis and results such as those of Kenneth Arrow.<sup>3</sup> As you see, I have put the word collective temporarily in quotation marks for a certain reason that will become apparent below.

Even at the cost of seeming pedantic, I feel it may be useful to have a closer look at the actual difference between so called individual and so called collective decisions. Let us start with considering the similarities. A decision must necessarily be a choice between several options. It is not necessary to decide on something that is already fixed. For decision making to take place, there must firstly exist several mutually exclusive options, and secondly there must be a decision maker, a group or an individual. If the decision maker is an individual, there is no reason to discuss who makes the decisions. He is there by nature, as it were. The theory of individual decisions is therefore concerned only with what he decides and why. There is an enormous literature on individual decision making, both in economics and the other social sciences. The various theories are usually connected by the concept “optimal decision”. If “optimal decision” merely means that a person always chooses what he deems to be the best “everything considered”, the theory becomes nearly tautological. Another matter is the fact that it is almost impossible for an outside observer fully to know the deliberations of the decision maker in question. Note that what we have called individual decisions may not necessarily be made by one single physical person. The point is that there exists a decision maker and that he is forced to make a choice.

The situation is different regarding so called “collective” decisions. Firstly, it is then often the case that none of the available options is the best one from the point of view of every one concerned. About this fact, nothing can be done. The conflict is a datum. Hence, it does not make sense to talk about the “best” option. Since the word “best” cannot be applied to any option, the idea is often transferred to something in reality altogether differ-

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<sup>3</sup>Kenneth Arrow: *Social Choice and Individual Values*. Second edition. John Wiley & Sons, New York, 1966

ent, namely who is the best *decision maker*. Suppose there are technically a number of potential decision makers. Then it might be natural to think that, if we knew what each of them would choose if given the authority to do so, the concept of best or optimal decision maker is identical to the concept of best or optimal decision. But not so. Firstly, several different decision makers may arrive at the same decision. Secondly, in the case of conflict the concept of best decision maker is as meaningless as the concept of best decision. The basic conflict between individuals regarding the decision is also a basic conflict regarding the decision maker. Thus, we see that it is rather bizarre to propose discussing the choice of decision maker as the best solution to a basic disagreement about potential decisions. Perhaps we could say that it is possible to like or dislike a given decision maker for reasons other than the choice he would make, but in that case the specification of possible alternatives must have been incomplete. It may, of course, be feasible to eliminate certain technically possible decision makers because all agree they do not want them. But technically, several possible persons might remain. To sum up: either there exists an authorised decision maker, and then there is in principle no difference between so called individual or so called collective decisions. Or there is conflict regarding the choice of decision maker, and in that case it makes no difference whether the matter in question concerns one person or several.

Acknowledging basic conflict between persons while at the same time hoping for the existence of an ideal decision maker can lead to such hopeless circularity as saying “not everyone likes the principle of decisions by majority voting, but since the majority likes it, it is right.”

Is the discussion over then, ending in an impossibility? I think not. Many interesting and important questions remain. There is the question of what kinds of decision makers or methods of taking decisions that historically have been recognised or may be recognised in the future. There is also the question of the impact of different types of decisions in this matter. Finally there is the question of the behaviour of different kinds of decision makers, of the results of their actions, not least because the results may influence their chances of retaining their authority. Here we have to distinguish fairly sharply between two matters: Firstly, that there may not be any decision maker who could be said to be the best or the right one in a rational sense. On the other hand, there is no doubt that people, even if they disagree, can act so as to influence the choice of decision maker. What has been said above therefore does not preclude that the kind of decision maker obtained by a collective is a function of the individuals’ opinions of such an institution, and of how they act in order for their opinions to have an effect.

## 3.2 Some reflections on Arrow's Theorem

Arrow's Theorem was developed by an economist, and was presumably intended for application in economics, but there is no reason to think of it as exclusively appertaining to economics. The problem concerns the general possibility of finding a way to make decisions which represent the different wishes of the various members of a group. Certain misunderstandings have arisen concerning both the real sense of Arrow's Theorem and its significance for practical politics in a society. Professor Leif Johansen has, in a recently published article, made a clarifying analysis of both these questions.<sup>4</sup> However, for our special purpose, there may still remain something to say about them.

Arrow imagines a "society" consisting of  $n$  individuals (or groups). The term "society" in this context may be somewhat problematic, since under Arrow's assumptions the individuals need not have anything in common (except, perhaps, a certain appreciation of logic). There is a set of different possible social situations, and the members of the society may differ (or not differ) in their ranking of these situations. The problem is whether it is possible to construct a social (common) ranking which in some sense reflects the various opinions of all members of the society. In order for the problem to become precise and tractable it is necessary to make two kinds of assumptions. The first concerns to which degree the  $n$  individuals may differ in their opinions. The second concerns which properties of the common social ranking (the social preference function) people in general, a researcher or whoever, deem reasonable or unavoidable.

Intuitively, it seems reasonable that it is easier to construct a common ranking the more similar people are. Similarly, it seems intuitively reasonable that it is easier to construct a common ranking the fewer restrictions are made on its properties. Arrow assumes what we might call the worst case concerning differences in opinions. He assumes that the  $n$  persons can have any ranking, as it were, of the available options, regardless of the opinions of other members of the society. Furthermore, he sets restrictions on the common preference function which he deems imperative for it to be named a social preference function. His conclusion is negative.

His problem can, however, be stated in a more general way. On the one hand, we can consider different degrees of variability in the preference orderings of the  $n$  persons. On the other hand, we can consider various

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<sup>4</sup>Leif Johansen, 'An Examination of the relevance of Kenneth Arrow's General Possibility Theorem for Economic Planning', *Optimisation et Simulation de Macro-décisions*, collection Economie Mathématique et Econométrie No. 3, CERUNA, Faculté N.-D. de la Paix, Namur: 15-51

restrictions on the common preference function we are looking for. Intuitively we may feel that there is kind of substitution here: the more similar the opinions of the  $n$  persons, the more restrictions it will be possible to place on the common preference function before making it impossible to find one. On the other hand, given a set of restrictions, there is the question of how drastic assumptions one may make about people being similar in order to find a common preference function.

There are many ways to make these suppositions more precise. We shall choose one of them as illustration of the above.

It is necessary to distinguish sharply between restrictions on the preference function on the one hand and assumptions about the composition of preferences in the population on the other hand.

Let us assume - perhaps somewhat arbitrarily - that the restrictions can be ordered with the “most important first”. Let  $r_i$  be one such restriction, and let, in particular  $r_1, r_2, r_3, r_4, r_5$  be the basic restrictions postulated by Arrow.<sup>5</sup> And let  $r_5$  be the requirement of transitivity.<sup>6</sup> Furthermore, we introduce cumulative restrictions  $R_i$  such that

$R_i$  implies simultaneous satisfaction of  $r_1, r_2, \dots, r_i$ .

Arrow lets the individuals, independently of each other, have any preference ordering of the available options. Let the set of all conceivable preferences be denoted  $S_A$ . It is Arrow’s set of possible simultaneous preferences (for a given  $n$ ). This set and  $R_5$  together imply Arrow’s (im-) possibility theorem. In particular, the principle of majority decisions does not represent a social preference function in Arrow’s sense of the term. Suppose we now set a limit to how “wildly different” people can be. Assume there is a subset  $S_1$  of  $S_A$  such that one or more Arrow-functions are possible, but not one that satisfies  $R_6$  etc. In particular, there may exist a subset  $S_2$  where majority voting would represent a social preference function satisfying  $R_5$  but not  $R_6$  etc. We could then go on to look for a  $S_3$  that satisfies  $R_6$  but not  $R_7$  etc.

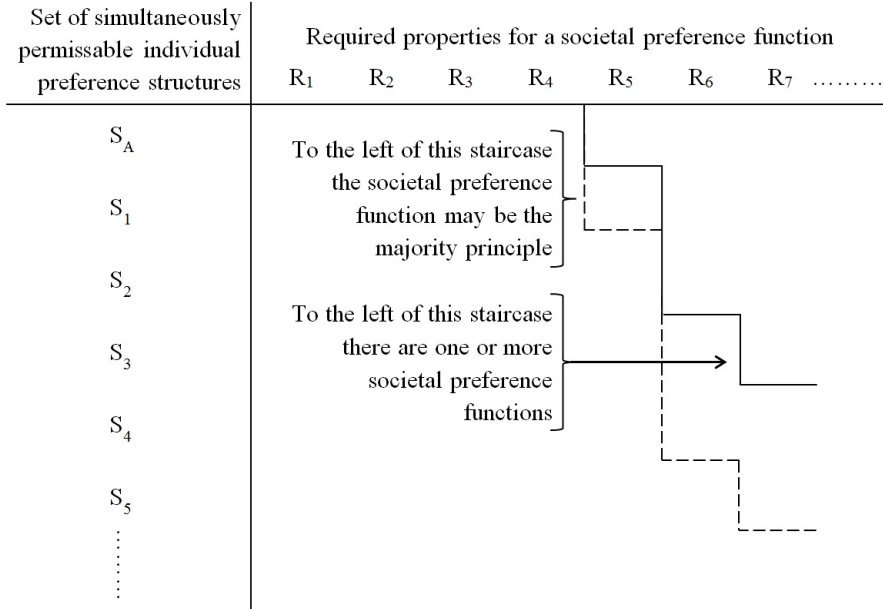
A schematic representation of the process described above is shown in figure 2.

From figure 2 it will be seen one may line up a series of “possibility”, or rather, impossibility, theorems in a pattern similar to the special one chosen by Arrow. Those who wish to be social planners may find these theorems to be rather sad ones. Contrariwise, those who seek arguments for “intervening as little as possible” may understand these theorems as strengthening their point of view. To which degree are such conclusions justified?

<sup>5</sup>See Leif Johansen, op.cit. pp 23–28.

<sup>6</sup>Note that transitivity is treated by Arrow as part of the *definition* of a social preference function, while here it is interpreted as a restriction.

Figure 2: Restrictions on the properties of a social preference function.



Let us make a thought experiment. Let us imagine that Arrow's theorem simply was wrong. That is, we suppose that it is possible, on Arrow's conditions, to find at least one social preference function, and that it is exactly known what this function is like. Which difficulties facing rational social policies would then have been cleared away? The result may be rather meagre. We might for instance suppose that there exists a feasible preference function, but with the property that it prescribes decisions that would be almost similar no matter how disparate (practically speaking) the opinions of the individuals concerned. In particular, it is conceivable that the social preference function, if it existed, would lead to nearly status quo whatever the people's preferences. Another small matter deserves mentioning, namely that there may exist several social preference functions, giving rise to a new decision problem.

A much more important problem in this connection is the following: What might be the basis for contemplating a society interested in a common representation when people have as little in common as Arrow assumes? No existing society is so lacking in social cohesion. Such a society could never survive.

Let us hypothetically assume that majority voting satisfied the properties of an Arrovian social preference function. How would the evaluation of

majority voting be impacted? Not necessarily very much, except that certain technical-administrative difficulties would be cleared away. The basic conflict between people would of course not necessarily disappear. In particular, for the losing minority there is scant difference between what is for them a bad decision and the administration having trouble with the paperwork.

### **3.3 A special case of the so called voting paradox**

Given Arrow's restrictions, all conceivable systems of governance are impossible, including that of majority voting. If these restrictions are maintained, there is nothing much more to say about the "right" system of governance, or indeed about majority voting. However, there is only one thing wrong with majority voting judged by the requirements of Arrow: it does not satisfy the property of transitivity in the social preference function. In this context, at least two matters may be discussed, namely firstly how important is this property, and secondly, how probable is it in practice that it will be broken. If we limit the disparities in individual preferences, it is easy to construct situations where the property of transitivity is not violated. In fact we can, on certain reasonable assumptions, calculate the probability of majority voting violating the transitivity property in a concrete case. There is no reason why we should not turn the whole problem upside down and say: majority voting is a great principle, we like it, but what is then the matter with human societies when they are so constructed that the majority principle does not satisfy the requirement of transitivity? As a basis for further consideration of this problem, let us first study a special case of the so called voting paradox.

Imagine two cases up for decision in the Norwegian Storting. In each there are two options. To simplify, say that in each case one option is to let things stay as they are, the other "to do something about it". We assume that the alternatives are described sufficiently clearly to make everyone understand what the decisions are about. To make the situation extra intricate, we shall also assume that the representatives are in a certain sense strictly logical in their views of either case taken separately. When one case is deliberated on, the situations regarding the other case is regarded as a datum regardless which of the two options exist. If a group of representatives prefer one option in the first case, they will support it wholeheartedly, whatever the situation in the second case, and vice versa. We shall furthermore suppose that when each case is thus considered in isolation, there is in both a clear majority in favour of "doing something".

We shall use the following notation:



	Case 1	Case 2
“Old” solution	$A_0$	$B_0$
“New” solution	$A_1$	$B_1$

Choosing a numerical example, one possible situation could be the one described in tables 1 and 2

Table 1:

Opinion in case 1 for a given decision in case 2	Number of representatives
$A_1 > A_0$ (whether $B_0$ or $B_1$ )	90
$A_0 > A_1$ (whether $B_0$ or $B_1$ )	60
Total	150

Table 2:

Opinion in case 2 for a given decision in case 1	Number of representatives
$B_1 > B_0$ (whether $A_0$ or $A_1$ )	90
$B_0 > B_1$ (whether $A_0$ or $A_1$ )	60
Total	150

The following preference structure is then compatible with the situations in tables 1 and 2:

Table 3:

Group	Preference structure	Number
1	$A_1B_0 > A_0B_0 > A_1B_1 > A_0B_1$	60
2	$A_1B_1 > A_0B_1 > A_1B_0 > A_0B_0$	20
3	$A_0B_1 > A_0B_0 > A_1B_1 > A_1B_0$	60
4	$A_1B_1 > A_1B_0 > A_0B_1 > A_0B_0$	10
Total		150

Groups 1, 2 and 4 prefer  $A_1$  to  $A_0$  regardless of the decision in case 2, so there is a majority of 90 for  $A_1$ .

Groups 2, 3, and 4 prefer  $B_1$  to  $B_0$  regardless of the decision in case 1, hence there is a majority of 90 for  $B_1$ .

If, however, the two cases had been deliberated on simultaneously, groups 2 and 4 are the only ones who prefer the combined solution  $(A_1B_1)$  to the combined solution  $A_0A_0$ , while 120 are against.

The explanation is that *there is no combined solution that commands a majority* in the sense that it is preferred by a majority.

### 3.4 Does the so called voting paradox reveal an error in the majority principle?

Many would perhaps agree with this statement, but I think it is erroneous. What do we really demand of a decision system, in particular the majority principle under consideration, if we require that it should never be in a “muddle”? What would we for instance say about a system that worked smoothly and mechanically so that no one noticed anything, as it were, even in a situation of conflict as illustrated by the numerical example above? One might as well maintain that the majority principle serves to uncover situations that are particularly difficult where it is necessary to do “something else”. Suppose for instance that in some complex cases it were necessary or desirable to have the decision made by a dictator or an arbitrator. It is difficult to see this as a decisive argument in favour of dictatorship or arbitration in situations where the majority principle works without contradictions.

The above illustration does, however, reveal certain worrying traits. It shows that the majority principle, if applied separately in case after case, can lead to a total situation which is unsatisfactory if evaluated by that same majority principle. The inverse development may also, of course, take place, namely that there is a weak majority for certain measures taken separately while the total result might have a very high priority for the great majority. There is also a possibility that no measure taken in isolation commands a majority, while a combination of several of them would have. In particular, one wonders what the final result could be if a great many cases were decided on one by one, which often happens in practice.

It seems natural to believe that in the kind of situations described above, a naive application of the majority principle, without knowledge of the various consequences, would lead to an unstable situation of vacillation. But this is not certain. As contradictions are discovered, the process of decision making will be affected. One way would be to combine simple majority decisions with decisions made by more or less complicated tactical votes. A process like this does not necessarily lead to unstable or muddled decision making. We might also reason as follows: Several, perhaps most, political decisions can be changed, at least after some time has passed. Suppose a series of

majority decisions made over time turned out to be self-contradictory when seen as a whole. If the consequence were that certain measures were valid for a time before being adjusted by new voting, we might maintain that, at least in certain cases, the disparate interest groups in society get their chance not always to be voted down. We might even be justified in asserting that a compact homogeneous majority in all cases would be very unpleasant for the minority.

There is, however, small reason to draw significant conclusions on the thin and schematic basis presented above. Hardly any experienced politician would dream of interpreting the majority principle (when he uses the term) as just a question of saying ay or nay to a proposal, and let the result depend on some kind of simple majority of votes. In the next section, we shall endeavour to discuss the majority principle in a way that we hope may have some practical political relevance.

### **3.5 Some thoughts on the majority principle in practice**

People in general probably do not perceive the term majority principle or government by the people as an explicitly designed and simple arrangement for making decisions. The term rather indicates a relatively spacious framework for many different systems. We will mention two features of this framework that most people probably would find essential.

The first feature is this: the more people sharing an opinion, the greater their influence. The reason for the supposed correlation here may be that people reason that it is “right”. Another reason may simply be that when people act together, they often obtain great power. Empirically then, concerted action by many is one way of arriving at a position of power in society. Ideologies taken from political philosophy about “just” governance may have influenced reality. But I guess it is more sober to accept that a society *must* have some kind of government, and that in certain societies it is the case that the natural background for governmental power is a great number of people standing together.

The second feature is the one already mentioned, that is, a society *must* have some kind of government. If the society is a large one, the power stemming from a great number of persons must be delegated to a decision making apparatus that works in practice.

An essential prerequisite, necessary for any kind of government, is that among the members of society, some are willing and able to exercise power. Fortunately, the world is so wisely arranged that such people exist.

Starting from this general sketch, an economist is strongly tempted to open his toolbox and attempt to build a model, or at least construct some building blocks. The above sketch clearly presents a picture of two parties. One party, perhaps the majority of people, wish to be governed, but are not indifferent to *how* they are governed. In other words, we have a situation which strongly tempts an economist to come up with the terms supply and demand.

Consider first the supply. The supply derives from people (probably a small minority) who wish to participate actively in government. We assume that these people somehow like to have leverage, but shall not care about their motives. Nor shall we try to parse the term “have leverage”, but simply assume that, in a society of the kind considered here, this means that many persons in society support one’s decisions. Such a person can supply a promise to work for certain decisions to be made. He (or, of course a team or a group of people who want to lead) will then want to look around for a kind of “menu” to be presented to those whose support he wants. The next step is therefore to speculate a little about how the would-be leader goes about constructing his menu.

We assume that would-be active politicians or decision makers have some knowledge of the preferences of the population whose support they are seeking. Suppose a person or group, wanting to become a leader, wishes to address a certain part of the population, and that he knows they have more or less similar preferences. His first problem is whether the space is taken, so to speak. It may be difficult to canvass politically on a basis which is almost similar to that of another politician or group. Also, it would be costly and the result uncertain. Instead of fighting about the right to this special menu, it might be more sensible to join forces and share power. We shall not attempt to theorise about the inside tug-of war between potential leaders about who shall present a certain menu or represent a certain group within the population.

Disregarding this complication, the next question is choosing the menu to be supplied. The matter seems simple if a large group of the population has more or less the same preferences: present a menu that suits their preferences. But this conclusion is not altogether certain. Suppose the menu were slightly modified in order to appeal to people outside the group. Even if this menu deviated slightly from the preferences of the homogeneous group, it might still turn out to be their first choice compared with other menus presented. On the other hand, if there exists a homogeneous group, presenting a menu remote from their preferences may be an invitation to “found a new party”, especially if the group is large. The question of how far to stretch a menu away from an original centre of gravity would then be a complicated matter

of strategy. Thinking along the same lines, we see that it may be possible to present different menus simultaneously if the population consists of more or less homogeneous groups with regard to preferences. This applies a fortiori if the preferences of the groups are very disparate.

The conclusion should be that one could almost certainly gain massive support from a homogeneous group for a menu reflecting the group's preferences. But here may arise another complication, namely how much the group takes into account whether there are many or few altogether supporting the menu. We shall return to this consideration below.

The above discussion shows how complicated it can be to try to construct a theory of how the menus are created. We have mentioned some of the complications mostly to give the reason why we shall ditch the attempt. We shall simply assume that a set of menus are presented for people to accept or reject, and base the assumption on the fact that we know that this frequently happens.

Let us then assume that, after the kind of complex considerations discussed above, a set of menus are presented which people are invited to support. We may imagine an ordinary election, where supporting one suggested menu is the same as voting for the party in question. (Here, a quibble is possible, since those who aspire to active political leaderships are also voters, but they are normally too few to make any difference.) Assume there are  $k$  menus, (that is  $k$  parties) and let us denote them

$$Y_1, Y_2, \dots, Y_k \tag{28}$$

$Y_1$  could be a mixture of a vector with several components (e. g. the numbers in a fiscal budget) and a verbal description of positions.

We shall now consider the situation from the point of view of "demand", that is, the deliberations of the voters. Each voter must be assumed to take into account at least the following three points:

1. The menu he himself prefers or finds reasonable, which may be none of the proposed menus (28).
2. His opinion of each of the proposed menus *if* the menu in question should be the prevailing one.
3. The support he assumes each menu will obtain, that is, according to our assumptions, the number of votes it will command.

We shall assume that the individual voter will not vote "tactically", since his *partial* influence on the final result is considered to be insignificant. (We

may of course ask why he should then bother to vote at all, but that is such a large separate chapter that we shall leave it be.)

Even though it may be supposed that the voters have a great deal of information about their fellow human beings and about the society they live in, there are two basic matters they have to make assumptions about. As mentioned above, one of them is the outcome of the voting. The other is the menu they will have to live with until the next election. The realised menu may of course turn out not be any of those presented in (28). (We shall return to this point below.)

In order to illustrate one possible voter behaviour, we will assume that the voters, for lack of other information, will loosely surmise that they, by supporting one of the  $Y$ s in (28), will “contribute to” making this menu the outcome of the election. (A voter may, of course, be of the opinion that his contribution is worthless, and hence become party to the unspecified protest programme of the non-voters.)

On the contrary, we assume that a voter will have a reasoned opinion about the outcome of the election. Let

$$n_{1i}^*, n_{2i}^*, \dots, n_{ki}^*, n_{0i}^* \tag{29}$$

be the percentages of votes that voter number  $i$  assumes will be the outcome for the  $k$  menus and for the non-voters ( $n_{0i}^*$ ). Each menu (each party) now has two characteristics for the voter, namely on the one hand how he feels about the menu and on the other hand which percentage of the votes he believes the menu in question will obtain.

From among the several possible voter behaviours, let us consider the following that perhaps is not totally unrealistic. The fact that a party is presumed to obtain many votes will by itself make this party attractive, and a good program will also by itself make a party attractive. (As to this last criterion, we could imagine a *sign*, a minus showing a party as more or less repulsive, and so that the sign of the vote would equal the sign of the program.)

It is now not unreasonable to imagine that each voter is able to rank the menus (the parties) by means of the above two criteria, and thus decide which party he prefers and so votes for.

More concretely, we may now imagine that this voting process represents the election of a parliament, that is, the first step towards establishing a decision making structure. And we may ask: does this election process imply a satisfactory way for the ordinary voter to participate in the decision making?

The question may be regarded as analogous to questioning whether the consumers of a society feel that the producers offer satisfactory goods. The

model sketched above includes a kind of supply side possessing strong wishes to attract adherents and where the suppliers *compete*. Just as in the case of the economic market mechanism, we may ask whether the voting mechanism works as it should. But according to which criterion? I see no other possible answer than a personal opinion.

We mentioned that electing a parliament was the first step towards establishing a decision making system. What then? Some people will certainly maintain that we are back to the starting point, since we can now regard the parliament as a “society” with the problems illustrated by Arrow’s theorem.

In principle, this point of view is correct, but in “practice” there is a considerable difference, for several reasons. Firstly, the group directly engaged in solving conflicts or seeking compromises is much smaller than if the whole people, as it were, should meet. Secondly, there is the circumstance that when seeking a compromise within the framework of existing party programmes, the number of alternatives under discussion is much smaller than if the discussion should comprise the individual preferences of all voters. Lastly, the outcome of the election will give the political leaders an indication of in which direction and how much to compromise.

Some concluding remarks. Not infrequently we hear that the procedure described above, or similar procedures, are wrong because they do not in a satisfactory way represent the “will of the people.” The sense of such an objection is not easy to understand. The point of departure is that this unambiguous will does not exist. That is the reason there are difficulties. Another equally strange objection is that the influence on decisions of the individual citizen is too weak. But the crux of the matter is that society can be organised, and decisions made, in a large variety of ways, and that the individual citizens may have fundamentally different opinions about these arrangements. In which sense would it then be right that the individual should influence decisions strongly?

## 4 Big business and the man in the street

### 4.1 The voice of the public in the modern industrial state

We shall try to give a sketch of a group for which it is difficult to find a proper term. Above, we have used both the expressions “the man in the street” and “the public”. Some would instead say “the consumers”, others “the private sector” or even “the people”. The group we are thinking of, is perhaps best thought of as nearly all members of a society as they regard their surroundings from their own parlour window, or as they discuss social questions with their neighbours or colleagues. It is, of course, fairly difficult to get to know the “public opinion”, as we tried to show in the foregoing chapter. What we have, are the voices of spokesmen. However, concerning the matters we shall discuss here, I would guess that certain opinions are held by a very large majority.

It is of course not the case that the public only bad-mouth big business or manufacturing industries in general, but here as in other circumstances, complaints are the most heard. We shall try to discuss some of them.

We shall firstly consider the issue of unjust distribution of the results of production. This question can be considered in two different ways, both very old, but in other respects rather different.

The first way of thinking, and the one most easily grasped by the common man, is that “consumption” is unequally distributed among persons or groups in society. Some people wallow in abundance, while others have to scrimp and save. Some people have the power to earn more than others, and to consume accordingly. The owners or managers of the means of production have the greatest opportunity for large earnings, which is regarded as unjust. This is a genuine conflict, supposedly due to an unfortunate structure of coalitions in society, that is, a coalition structure which does not represent the distribution of power in society as it “ought to be.”

The second way of thinking is much more complicated (and therefore often confused with the first). We may perhaps start by expressing it loosely as follows: If there are groups in society which have other aims for production than making it result in human consumption, and if such groups have considerable power, economic activity may become perverted in various ways. Suppose that the owners of considerable means of production have preferences for owning real capital in itself, perhaps because they then obtain power over others. A common economic objection to this way of thinking, is that such behaviour would result in bankruptcy. I am afraid this argument is not correct. Since we have introduced the above mentioned element into



the preference structure of some members of society, the basis of profit calculations has changed. Real capital, combined with labour, can produce new capital as well as consumption goods. If the owners of capital goods enter both their value and the value of the increase at sufficiently high prices in their accounts, the owners of real capital can finance their own profit in a process that is, in principle, self-perpetuating. As long as no outsiders have ownership rights, they never need, as a group, to become bankrupt.

A further development of the argument is that, from time to time, owners of real capital goods become frightened of their own shadow. Then, they value their capital at lower prices, which is an incentive to take a break. The value of real capital will fall sharply. In this way, a new and “healthier” financial situation is created, and the process of accumulation can start again. Another means of obtaining this kind of “spring cleaning” is supposed to be production of weapons and military conflicts. One result of military conflicts is the destruction of real capital. By accountancy rules, the owners of real capital are then owed corresponding money by the government. But if the government pays the debt by taxing that same sector, the real outcome will be that owners of real capital have (involuntarily) got rid of large amounts of capital goods; the rate of depreciation has been high. If these events are regarded as one-time happenings, without consequences for the foreseeable future, the whole chain of events can start again on a new basis.

This picture is of course incomplete as regards the complicated processes described, but probably represents a salient part of the rather vague ideas the majority have that “something is wrong” with the use of resources.

Another charge made against big business is connected with the above sketch. As the public becomes better informed and more sceptical to the curious process we have described, producers invent new and “smart” goods for the consumer, goods that give people a false impression of higher wages and consumption. Advertising provides the necessary “information”. The presumed idea is to create a large package with small contents and persuade people that this is progress. To the objection that people this stupid deserve no better, it is said that those with resources and power control information.

A third group of objections concern the current problems of pollution and degradation of the environment. The debate seems to fall into three parts. The first concerns the question of whether any pollution at all should be permitted. In other words, the question whether any activity should be allowed if it directly pollutes. The second concerns the question of how to clean up after pollution. And the third concerns the question of who should pay.

A natural occurring thought is of course that we can immediately observe that manufacturing industries pollute. (All the same, most people will con-

cede that it is not manufacturing industries that throw litter and containers wildly about in nature.) But otherwise, what we mostly hear is that manufacturing industry has a too great regard for profit and not enough for the effects of pollution. From the point of view of society, therefore, monetary profit is too high as well as being wrongly divided in one of the two ways described when discussing the problem of distribution above. Some might define the problem as partly consisting in the system fooling the public into efforts of labour and a consumption that it does not genuinely want.

Finally, we have the general discussion about conditions in the working place and the worker's right to participate in decisions. The arguments tend to be that in contemporary industrialised society, there is a tendency to create too many relations of subordination, or in any case that the distance between superior and subordinate is too large. It should be added, that not many will contend that conditions today are worse than in "the olden days". What is meant, is that contemporary conditions could be better than they are. Some people, however, would probably maintain that the argument is more subtle than that expressed in the public debate. The real crux of the matter could be something like the following: the point is to have the "right" to participate in decision making. This right may be delegated to certain central decision makers on the understanding that the delegation may be cancelled at any time. Those who think this becomes almost comical have completely misunderstood the matter. Here, it is not only the choices made and who makes the choices that is important. The feeling of having the possibility of making choices is important in itself.

## **4.2 Wishes for a better society**

Some complaints concerning the industrialised society have been described above. If we asked people what kind of society they wish for, many would say that the answer follows from the complaints, and the faults mentioned should simply be eliminated. What remained would then be the better society.

Let us consider what this better society would be like.

Firstly, income and/or consumption would be more equally distributed between persons and groups. Furthermore, average consumption would increase since resources would not be wasted on useless accumulation of capital. To conclude: in the improved society a great majority would be better off, some of them indeed very much better off.

In this better society people would be more rational and sensible when choosing consumption goods because their "real" preferences would not be disturbed by advertising. Production would not be according to profit, but directed towards producing what people really want.

Pollution would, however, still be a challenge. But here we might hope that the goods that people really want, and which they can now acquire, are less polluting than the goods forced on them by big business. Moreover, we might presume that with less unjust inequality, people would be more willing to deny themselves certain material goods or to work harder on cleaning up the environment than they are in the present society. (The correct cliché seems to be that people prefer a society of cooperation to one of competition.)

Well-being at work might increase, for two reasons: Firstly, the consciousness of producing useful goods for the majority of people would make work more meaningful and challenging. Secondly, there would be no conflict between leadership and workers when the purpose of production is to create goods that people really want.

Perhaps we have not described this better society with complete conviction. Some might even suspect that we have deliberately drawn a somewhat naive picture. The answer is both no and yes, in that order. One might say the humanity to a large extent has the power to create such a better society. On the other hand, there probably exists some naive ideas about how attitudes would have to change in order to bring about the society sketched above. In the following two sections, we shall try to illuminate some of the dimensions of the problem.

### 4.3 Some facts

Let us to begin with consider certain basic traits of the Norwegian economy in 1971.<sup>7</sup> The picture given is probably not fundamentally different from that of other countries said to resemble our own.

		Milliard kroner
Total disposable income	ca	79
Private consumption	”	51
Public non-military consumption	”	11
Military expenses	”	3
Net increase of national assets	”	14
(Depreciation	”	20)

The figure given for private consumption implies an average of 13 000 kroner for each person.

Let us now carry out some experiments with the figures to see what scope exists for carrying out the ideas sketched in the preceding section. Public non-

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<sup>7</sup>The data are taken partly from the Government's *National Budget for 1972*, partly from Statistics Norway's report *Economic Survey of the year 1971*

military consumption we presumably leave unchanged, at least not decreased. But assume that we could cross out military expenses. Furthermore, let us make a drastic assumption about the policy of accumulation, and suppose a part of it goes to real capital that the public finds unnecessary. Here, we must not forget that one component is public real investment. Even so, let us make the drastic assumption that it would “do no harm”, according to the majority of people, if we removed for instance 1/3 and spent it on private consumption. Even the bitterest opponent of private enterprise would probably have difficulties with such a large number. (Some might say that private investment is much larger, being financed by foreign loans, but not many would feel that we should borrow a corresponding sum to pay for private consumption.)

After these “cuts”, every Norwegian would have a consumption of about kr. 15 000, that is an increase of about 15 per cent from kr. 13 000. If we also assume that 1/3 of existing real capital is “useless” and therefore does not need to be replaced, it would be possible to achieve an average consumption of about kr. 16 700.

The “savings” sketched above might alternative be spent on more “useful” investments.

These figures perhaps deserve no more than two remarks. Firstly, the increase in consumption is not overwhelming. Secondly, the increase is surely small in comparison with existing differences even between ordinary wage earners.

A possible argument here is that these numbers are not relevant, it all depends on what they contain. If goods were better and cheaper, living standards might become very different from what they are. There is certainly a good deal of leeway, but when it comes to seriously great opportunities, there unfortunately exists a decisive counterargument, namely this: The figures are as high as they are in the main due to the two disliked circumstances, namely that prices are high and that the public are willing to buy goods that are inferior either technically or in the shape of “boring mass production”. Homogeneous goods, ready packed, goods not made by artisans, are the basis of mass production. If goods were made by artisans, and of “good old quality”, we would have to make do with physically fewer of them, at least unless the working day were not substantially prolonged. Moreover, in a purely technical respect, mass produced goods are in many cases far superior to those made by artisans. The only remaining argument that they are boring and perhaps less durable. Many things we feel we need today could in any case never be made by artisans.

Then there is the everlasting question of advertising and commercials. Are there sensible reasons why they should not be abolished so that the

public could enjoy the savings in the form of lower prices or higher wages?

Among ordinary consumers there are various opinions about advertising. Many find at least parts of it useful. One finds out what is available. We may even hear people say that they like advertisements for their own sake, they give colour to life. But we shall not consider this kind of question, and limit ourselves to mentioning a couple of facts that in a sense have a deeper significance.

Imagine that the leaders of a large enterprise producing consumer goods wanted to comply with the consumers' wish for rational production without advertising. The leadership calls a meeting with the employees in order to let them decide. We need hardly doubt the outcome. Of course, not many workers have been presented with such an unpleasant question. Therefore, there is little empirical evidence, but even so... I believe the conclusion would hold even if the employees were offered a wage increase equal to the saved expenses. Some employees might have wives who hated everything to do with advertising, but they would also give in to the threat of their husband becoming unemployed.

But what if this hypothetical proposition applied to the whole industry producing the said consumer good? Then the enterprises would in a way face equal terms? Even so, I think that many employees in the industry would maintain, and unfortunately rightly so, that their industry would lag behind in relation to other industries.

We shall not continue these speculations. They are meant to be an introduction to a more general problem facing the advanced industrialised society. Let us start with the conclusion: The problem is not how to get rid of advertising, but what to put in its stead. The reason is certain particular conditions of the modern industrial state.

The necessary communication between consumers and producers is normally thought to be brought about by means of prices of the goods. But this form of communication seems to become more uncertain the more the level of income increases. There are two main reasons for this. Firstly, there is a natural tendency for the spectrum of goods to increase with the level of income. Then the consumers will become less sure of how to divide their income between the new goods as these multiply. They wish to have the joy of being able to choose between variants even when there is technically no great difference; perhaps also the joy of novelty. Something similar develops concerning so called necessities, that is, goods that almost exhaust a low income. Here, too, it becomes less important to be careful when buying, as the consumption of such goods imply a lower marginal intensity of need.

The result of these developments is an increasingly uncertain message to the producers about how much to produce of each good, as well as a greater

danger of large fluctuations in sales from one year to another.

No system of production can afford to neglect these circumstances. A part of the problem of abolishing advertising seems to be how to find another answer to the difficulties described here.

What about conditions in the workplace in large manufacturing enterprises? Here it is not the place to discuss the real conflict, namely how income should be distributed. This problem was considered in the first section of this analysis. But there are also the problems of decision making, organisation of work, welfare arrangements etc. Those of us of an age to be acquainted with Chaplin's film "Modern Times", and who still follow social developments, will know that here have been great changes. The harsh regime has been modified, not only for humanitarian reasons, but even more because present day theory has it there is no conflict between effort and well-being in the work place. The apparent conflict has been more due to lack of knowledge about efficient organisation of production than opposing economic interests.

Finally, some remarks on the problem of pollution, and the structural changes necessary for combating it effectively. One might say that there are three different aspects of the problem, even though the boundaries are not sharp. Firstly, there are the cases where the degree of pollution is a fixed proportion of the good produced. Here, if we want the good, the pollution is inevitable. In other cases, there are various method of production, and some methods create less pollution than others. As a rule, it will then be necessary to pay for avoiding pollution in the sense that more resources will be needed in the "clean" than in the "dirty" production. Thirdly, there are products which are not in themselves polluting, but that lead to pollution because people dispose of them in a thoughtless way. In all these cases, combating pollution demands resources. Possibly unused resources can be mobilised, for instance by voluntary efforts, but otherwise allocation of resources to combat pollution implies less of some other good.

The principle of fining the polluter is more of a legal matter. As long as there is real conflict about distribution, there is no reason for a special treatment of the burden of combating pollution.

#### **4.4 The old problem of having your cake and eating it**

The above title is really just a concise formulation of the conclusions of the previous discussion. There is no need to repeat them. There are just a couple of additional points to make.

We suggested in the last part of section 4.2 that it is not in principle impossible to create what we called a better society. So where is the problem

of having your cake and eating it? Let us put the problem in a more explicit manner. The cake is the better society we gave a sketch of. But if the cost of having it for the great public consists of not having to think, and not changing their way of living or their attitudes to the environment, then they cannot have it costlessly. If we make such contradictory demands, the irony is that the present industrial society is probably pretty well the best compromise we can hope for.

A perhaps even deeper question should finally be mentioned. It is connected to the topics discussed in part 3. There we saw that only under conditions of extreme uniformity can we avoid conflict about how society should be organised and how decisions should be made. Conflict arises not only because each individual egotistically considers only his own advantage, but because there are differences of opinion concerning what society as a whole should be like. Disagreements concern the main structure of society as well as the countless lesser matters affecting its citizens. Since conflict is normal, we could regard existing conditions as one of many possible resolutions of these conflicts. It then follows that the concept of “a better society” is dubious as a contrast to existing society unless the “constitution” of the new society shows how to resolve possible conflicts. But how to find agreement on methods for resolving conflicts in the better society? There seems to be only two ways out of this morass. One is that it is possible to establish a power sufficiently strong to govern a certain form of better society, even when opinions differ. Of course, in this society many people would feel they had grounds for complaints. The second, and more attractive sounding, possibility is that people would adopt a form of discussion somewhat like this: I have an opinion, but if you have another, I shall not stick to mine. However, it is not solely big business which hinders such a way of life.

## 5 Justice, well-being and efficiency in the welfare state

The set of topics alluded to in the above title, and their practical aspects in the form of social policy, economic policy, the judiciary etc has become dominated by summary declarations of faith and unthinking terrorism of opinion, in grim contradiction to the avowedly contemporary demand for greater openness in human relations. Words like “equality” and “equal treatment” have a positive connotation in all contexts, so that when these terms are used they automatically imply that nothing wrong has been done. There has grown up a whole herd of sacred cows that are touched at one’s peril. But still....

### 5.1 The multidimensional character of the concept of equality

The famous slogan “all men are created equal”<sup>8</sup>, if understood literally, needs some modification. Nor is it certain that society and environment augment the initial differences as people grow up. Perhaps the opposite happens. It is easy to agree that most people are born with two arms and two legs, that we all become hungry at certain intervals, and that most of us feel cold when the temperature becomes sufficiently low. However, even in the two last named elementary matters, there are considerable differences. The more individual traits we consider, the more variegated the picture becomes. This is true for traits that are said to be congenital as well as for traits that are due to the environment. If we therefore stick to observable facts, without inquiring into causes, a statement of equality will be dangerously near to the trivial statement that people are equal except for their differences. A different and maybe even better point of departure is to take as a fact that people are perhaps not comparable and that hence it is not very meaningful to discuss equality or inequality in an absolute sense. And then we might as well postulate equality. And then what?

Some people will perhaps argue that what we have called equality above is not at all what people mean when they say that all people are at bottom equal. The meaning may be something like the following: Imagine that we could divide personal traits into those that are given from above, as it were, and those that society has in a way created, or can modify. Here all people *might* or would have been equal if they had all been subject to the same circumstances, as they say. We easily see that this way of thinking can be highly misleading. It could for instance imply that people have become

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<sup>8</sup>In English in the original. TN.



different because they have not all been given the same medical treatment. It is presumably more correct to maintain that people have become more equal precisely because they have received different medical treatments. To escape from this tangle, one might imagine dividing the complex of different personal traits into two groups, namely on the one hand those that are both given by nature and to be ignored, and those that, even though congenital, are relevant in connection with *effects* of factors that create inequality and that are not given by nature. Then we might perhaps be able to sort people into groups in which it would be possible to claim that the individuals would have been equal if they had been subject to the same social conditions. But as to comparisons *between* these groups, we are no further.

Some people will perhaps find the above deliberations deeply repugnant, others may maintain that they amount to hair splitting. The answer is that it is quite common to derive what we call equal treatment in social policy etc. from an axiom of equality. If that is what we try for, it is not unimportant to find an understandable and applicable criterion for equality. It seems clear that if it is necessary or desirable to arrive at a kind of general criterion for equality, this must be based on something which is a function a series of different individual characteristics. One could in other words conceive of constructing some form of *equality index*. If one then started from an a priori axiom that all are equal, this would truly be a peculiar index. It would take the same value for all people, and we could well question its usefulness.

There are good reasons to maintain that this strained axiom of equality has neither a sensible meaning nor any practical application. One suspects that something entirely different is meant, namely the following: We imagine that it is possible to make some sort of index as described above, but which in theory could be different for different persons. We accept as a definition of equality that this index takes the same value for different persons. To the extent that it were possible to achieve such equality, or to approach it by altering those components of inequality that were not given by nature, we could define a society where there *would be equality*.

This apparently purely formal reformulation of our index problem is not entirely innocent. Consider for instance all those who seem to argue as if basic equality is something humans and those who run society have gradually subverted or destroyed. Justifying such an assertion would be a hard task. The point is that *equality* or *equal treatment* is not something we can observe or measure in a neutral way. These concepts are *normative*, value judgments which are introduced by humans and which we comply with to a greater or smaller degree.

## 5.2 The question of equal treatment

Let us start with a remark that ought to be trivial, namely that before there can be a treatment, there must be a situation where someone is in a position to be treating and at the same time someone is in a position to be treated. Strangely enough one can often hear certain groups complain that they have been unfairly treated without their complaint having an addressee, except perhaps that they feel unfairly treated by Providence. This last, however, most groups might have reason to assert.

We have discussed the problems of basing a principle of equal treatment on an assumption that human beings are equal. But however that may be, there is no self-evident connection between equality and equal treatment. There are in reality four possibilities, namely 1) equal treatment of equal people, 2) unequal treatment of equal people, 3) equal treatment of unequal people and 4) unequal treatment of people that are unequal. If equal treatment is taken as an ethical norm, only two of these four possibilities are acceptable. The principle is then in a way simple, in that one does not have to worry about the difficult problem of to which degree people are equal or unequal. The principle may seem a safe norm, freeing one from responsibility, but let us take a closer look at the matter.

Firstly, it is clear that one cannot straightforwardly find the equal or just treatment by questioning the single individuals in a society. The majority will presumably be able to maintain or mean that others are treated better than themselves. Since we live in a world of poverty, we here meet the usual conflict of sharing the world's resources. But even if the matter cannot be wholly decided on such a basis, one should not wholly cut out the individual's opinion of his own advantage. If this last element is disregarded, the practice of a schematic principle of equality could lead to a mighty squandering of resources, sharpen the conflict between groups or lead to distributive measures concerning real conflict between groups giving unnecessarily bad results. There is another point to make, namely that proclaiming a more or less schematic criterion of equality may fundamentally influence the values of the individual, so that his values no longer express his own, genuine preferences, but express a kind of mimicking preferences affected by the official norms of equality.

Now, there exists of course no applied social policy even approximately based on a schematic principle of equal treatment. Nonetheless, if such a principle keeps being proclaimed as an ideal, it may strongly affect the development of social policy and policy in general. We maintain that this is not only a matter of wasting resources in the sense that their use will not increase well-being as much as is realistically possible. We maintain that

practicing or striving towards schematic equality could even do great harm to the well-being of certain social groups. One should not, of course, take too seriously all contemporary moans about problems in the welfare state, but it is possible that precisely the well meant dogma of equal treatment could do real harm to well-being, at least to that of certain groups.

There is no point in further elaborating the very general discussion above. In the following we shall take the preceding considerations as the background of attempts to make our ideas more concrete. This we will do by considering three different issues, that are of course closely connected, namely 1) the size and distribution of private disposable income 2) the uses of resources by the public sector and 3) the connection between these two matters and the efficiency of production.

### **5.3 Problems in connection with redistribution of private disposable income**

We shall first try to discuss the issue of redistribution of private disposable income under the assumption that total income is constant. The analysis will therefore be a partial one, not taking into consideration economic repercussions of the redistribution..

The issue of redistributing private disposable income is a fairly simple one, in the sense that it concerns a real conflict between those with more and those with less. The effects are clear enough, namely that those who receive become better off, while those who pay suffer a loss. As usual in such clear conflicts, there is no “correct” solution in the sense that one could compute what the results ought to be. It is therefore necessary to have some normative criterion for the redistribution. Our main concern here is the question of how to choose such a norm. As a rule, we would expect the normative criterion to be the result of considering what changes the redistribution would bring about in consumption patterns and way of life of the persons or groups concerned. The redistribution in itself is therefore to be considered as a means, not an end in itself, a means to obtain a certain pattern of consumption and a certain way of life. The interesting question is then whether the actual results of the redistributive policy correspond to its targets.

I believe it is usual, implicitly or explicitly, to base the targets mentioned above on observations of the actual patterns of consumption corresponding to various levels of income. True, surveys of consumption expenditure show considerable diversity in patterns of consumption, but it is assumed that these are individual variations occurring in similar ways for all levels of in-

come. This last assumption may easily become misleading. It is useful only to the extent that the various traits that lead to people having different patterns of consumption, are *uncorrelated* with the income in the original income distribution. When studying the average pattern of consumption of a given stratum of income in a historically given income distribution, and comparing it to the consumption pattern of, say, a group with higher income, what we observe is a kind of total effect, the hypothetical result of a change in income distribution where many other changes in personal traits follow. When redistributing income, we cannot assume that we also change these traits. Let us for instance assume that, with a given income distribution that has been stable for a long time, we have observed that average expenditure on books and other cultural goods vary with different income levels. It is then doubtful whether we, at least in the short run, from this could deduce what would happen to such expenditure after a redistribution of private disposable income. If, therefore, the intention of the redistribution is shaped by the observed pattern of consumption, this intention may not be realised. In certain circumstances, this is equivalent to saying that the redistribution did not give the expected result, which again might imply that the redistributive policy would have been different if its effects had been known.

Here enters a complicating circumstance. Even if the declared target is based on the dubious assumptions discussed above and so is not realised, it may be that it influences the resulting pattern of consumption. It is then important to consider seriously whether the observed pattern of consumption is the one and only sensible target. To put it more like a slogan: is it so certain that it is worthwhile to redistribute income in order to have the present low income groups be the better off?

The question of what the size of the total private disposable income should be for a given national income is the same as asking how large the public disposable income should be. This last question has two aspects. One aspect is the question of which concrete economic decisions it is technically or administratively convenient to assign to the public administration. The second is the question of using public disposable income for distributive purposes. Clearly, this last question has a large role to play in contemporary economic policy. The role becomes important because often in a society there arises a feeling of being powerless to redistribute private disposable income. One partially seeks to compensate by redistributing by means of public disposable income. In the following section, we shall try to consider problems then arising.

## 5.4 The problem of redistribution by means of public disposable income

Public disposable income is to a large extent used as a measure of redistribution, that is, to compensate for lack of effective redistribution of private disposable income. To the extent that the means are non-earmarked transfers, there is nothing more to be said in addition to the discussion of redistributing private disposable income. However, there is a special interest connected to the use of public disposable income when it serves to equalise people with different incomes with respect to certain kinds of consumption. There are many indications that the target for this kind of redistributive policy is markedly influenced by observations of consumption patterns of groups with varying private disposable incomes.

The question of how large a portion of national income should be disposed of by the state is partly one of political conflict. It is not possible to compute the correct proportion, since it is a normative matter. However, there is the question to which degree the norms established are determined by the expected results of a redistribution. We must assume that opinions about the size of the public sector are connected to expected outcomes of redistributing income by means of public expenditure. They are *inter alia* determined by whether the lifestyle that actually results from public expenditure corresponds to targets.

I shall here advance the hypothesis that the size of public expenditure is more often discussed than the question of how it more concretely should be used. In particular, I wish to warn against the danger that, for lack of other models, the targets for use of public expenditure takes shape and colour from historical observations of how people with various incomes use it. To make my way of thinking quite clear, I shall illustrate it in a way which may be provocative, and which I am quite prepared to drop if facts should prove it to be unrealistic. I am alluding to public disposable income being used to provide wider admission to educational institutions.

Let us give a highly simplified description of contemporary reasoning on this subject. In the olden days, only the well to do could afford to let their children go to university. The overwhelming majority of people were poor, therefore very few of them had the opportunity to pursue higher education. Therefore many geniuses were perhaps not discovered. Even if they were not geniuses, many among the poor were perhaps equally as interested in intellectual pursuits and equally as gifted as those few who had the opportunity. This was sad, but there is another aspect of the matter not quite so sad. Think of all those who did not want to become intellectuals. But what could be wrong with giving them the opportunity? They could of course

decide not to profit from it, but there could be no loss in receiving an extra opportunity. This last deduction is in no way as correct as it may seem. In general, it holds true only in a kind of society populated by Robinson Crusoes. Conditions are completely different in a society where humans are relentlessly tied together in an emotional community of interests. Consider the young man with full economic opportunity to devote himself to advanced studies, but who refuses to do so. It is unnecessary to say more about this than that there are obvious possibilities for social pressure. We do not need much imagination in order to see the beginnings of an efficient apparatus for producing what modern jargon calls “losers” in the modern welfare state.

I now visualise readers gleefully rubbing their hands and waiting for their chance to go in for the kill. They will say that here we have a good old-fashioned argument in favour of going back to the competitive society where the strongest advance by natural selection in the fight for survival. Sadly for them, I have to say that they are wrong. My verdict is entirely different. My criticism is not directed against the public disposable income trying to divert resources away from the allocation produced by private enterprise in the competitive economy, My criticism concerns the way the target of public redistribution seems to be a mimicking of the consumption and lifestyle of various levels of income as they were in societies where the struggle for survival and the survival of the fittest were realities. The problems are due to the social *ranking* of human activities, not people’s ability to realise the goals they find relevant. The problem then lies in inherited ideas that it is more worthy and noble to be competent in some areas than others. What for instance would sportsmen say to an argument that it is more worthy to be a tennis champion than a champion in cross country skiing? This kind of ranking we find in many areas of society. And the result? It is often similar to the one we would get if we assumed that someone who is a born cross country skier had to become a tennis player in order to be respected.

If redistributive policy continues after the servile pattern we have tried to sketch above, at the same time as the public share keeps increasing, we have the possibility of a gigantic waste of resources and opportunities for well-being.

## **5.5 Problems of efficiency connected to a policy for equality**

Certain aspects of the preceding discussions might well also have been called problems of efficiency. One could consider an optimal redistribution as ensuring that it should not be possible, after the redistribution, to obtain increased

well-being for all inhabitants in a sort of Pareto sense. However, the connection between efficiency and distributive policy is usually taken as concerning the production side, and that is what we shall here consider.

Two things are generally emphasised concerning possible connections between an equalising redistribution and efficiency in production. One concerns the connection between distributive policies and savings, or accumulation of capital, which can decisively influence society's *rate of growth*. The second concerns a possible connection between the efforts of the individual, his labour input, and distributive policies. Concerning the first point, it is easy to agree that it is a pure matter of conflict, a question of present consumption and well-being versus the possibility of improved conditions in the future. On the contrary, the question of inevitable conflict between redistribution and individual labour supply is far from as clear cut as is often maintained. We shall consider both these problems of efficiency.

A pure conflict between distribution and growth can actually only occur when distributive policy is what we might call Pareto-optimal. Pareto-optimal here does not only have the narrow meaning that no reallocation of goods and services could improve the situation for some without worsening it for others. The point is that the "optimal result" is a lifestyle for various groups which is not based on the "mimicking" described above. The concept of Pareto-optimality must then be understood in the light of lifestyles based on what one might call the "genuine" and natural preferences of individuals and groups. Only when possible squandering of resources is eliminated can there be question of a real conflict between redistribution and growth.

The targets for what we might call the "innards" of growth are equally as important as the targets for distribution as concerns patterns of consumption and lifestyle present and future. It is clear that if the objective of growth is future consumption in a broad sense, then the question of the contents of growth is also a question of distributive policy. There is a real conflict between present and future only when growth has assumed a meaningful content. It is clearly not very sensible to set as targets certain rates of growth unless the wished for growth is connected to a plan for sensible future development of consumption and lifestyle. If it is possible to split distributive policy into two components, one concerning the relative positions of individuals and groups, and one concerning the total resources disposable for current consumption, the only real conflict will be between growth and the last component of distributive policy. A necessary connection between total consumption and the distribution of consumption is led to only by certain constraints created by a particular form of market.

Concerning effects of redistribution on efficiency because willingness to work is affected, this matter is probably far more complicated than usually

assumed. The question is often put in a misleading way. One should not confuse, on the one hand willingness to make an effort in a certain job when there is no alternative giving higher wages, and on the other hand, whether a person will stay in his job if a competitor offers more. The *lowest* wage a person with certain qualifications will accept compared to transferring to a less interesting and less responsible job with the same wage, is probably far lower than that which he is offered because of competition for his services in highly qualified jobs. The common assumption that a person with certain qualifications will work less, take more leisure, or shift to a less important and less demanding position, is probably greatly exaggerated.

Some will maintain that there enters here an ethical principle. This principle presumably means that it is in some sense “right” that the able and energetic receive more pay than the stupid and lazy. It is really somewhat curious how the majority think that this principle goes without saying. What about its opposite: should those lucky enough to be born more intelligent than others, or who have had the luck to receive more education, in addition have extra pay! In this context one must of course not forget that there may have occurred unavoidable “outlays necessary to obtain income”. It may often be difficult to distinguish sharply between what we could call justified wages according to the first principle and necessary wages according to the second principle. Nonetheless, it is quite clear that on the supply side there is a kind of monopoly, either a natural one or one which has been partly abetted by the public sector’s policy of providing education. There is therefore no self-evident justice in free competition on the demand side driving wages upwards according to a criterion of marginal profitability.

A really large source of inefficiency, not only from the material point of view, but also as concerns well-being, is probably due to the educational policies of most countries. It is quite clear that a purely quantitative expansion of an inherited pattern of education may turn out to have negative consequences. When considering the economic aspect of a system of education, it is not to ask whether a given amount of education is economically beneficent. The question is very much one of which kind of education. It goes without saying that it may pay to give a certain person one kind of education, while the profitability of giving him another kind of education is highly dubious. The usual argument here is that the individual should be free to choose a study program in accordance with his interests. But how much do we really know about the outcome of such a free choice? It seems as if many imagine that each individual has a complete, and truly enormous, a priori knowledge of everything that might be interesting, and then chooses his own thing. Everyone knows that this is not what happens. The set of options known to the individual, and his ability to rank them based on knowledge, is limited



indeed. It is strongly determined by his environment, and partly based on superficial criteria of fashion and snobbery. It is tempting to return to our former illustration taken from the world of sport. Risking exaggeration, it is tempting to maintain that much of contemporary educational policy seems to correspond to ranking skiers according to how good they are at tennis. Possibly such ranking is not entirely devoid of meaning, but it can hardly be said to be the most sensible.

## 6 Mañana

### 6.1 Introductory remarks

At first, I felt I had found a rather good title for this, my sixth variation on the Gossen theme. The matter concerns the tendency of human beings to postpone unpleasant measures, to bring forward advantages and postpone disadvantages, in short to live on credit, as they say. In this connection, I am not so much concerned with small private matters. What I have in mind are certain traits typical of society as a whole, or of all societies combined. It is not difficult to find examples; here are some.

We continue to wreck wonders of nature without sufficiently considering what we lose. “There is still time left before everything is destroyed”. We poison water and air, but this cannot continue “in the future”.

We arm in order to achieve disarmament some time in the future. “In present conditions, there is nothing else to be done.”

We buy more and more cars, but when there are a great number of them, we have to lessen the number and put collective transport in their place.

Our consumption patterns have to change to prevent the world becoming filled up with trash, but in the meantime we need more of the kind of consumption goods we already have.

We wish to help the poor people of the world, but so far, the aid has consisted of making it possible for them to multiply. We do not need all that many more people in the so called advanced world either, but this a matter for coming generations if they feel crowded.

These ideas made me think of the man in the large sombrero, as he (reportedly) sits in the shadow and annoys the tourists. But on further consideration, the parallel is not a true one. Our friend may have a relaxed attitude to matters that vex us, while he today enjoys what we most shall be missing tomorrow because then it will be too late. He avoids stress, we accumulate it. In modern industrialised society we are good at postponing certain important matters. We are also good at finding excuses by referring to our hard work in expediting certain other matters.

Ongoing debates on these topics seem to show that there is a paradox: we do things that we do not really want to do. Some then say that we need information, people do not understand what is good and bad for them. There may be a point here, but it is not the main one. Others claim that we should be different, and in particular show more consideration for our descendants. But again, this is a minor point. The chief problem is that actions necessary to achieve our aims seem unreasonable to the individual because they only makes sense from a collective point of view.

There is no reason to deny that we are all more or less ignorant. Most of us, however, also try to modify our ignorance. We shall here avoid further speculations on this subject. Nor shall we consider the special case that people do not always know what is good for them. Nor shall we discuss whether humans ought to be different from what they are according to certain norms. It might seem as if we touched on this latter subject matter in the foregoing chapter when saying that it could become necessary for people to change their way of living. However, the discussion there was not based on ethical norms, but considered how to achieve consistency between certain demands and certain kinds of human behaviour.

What we shall consider, are problems due to the fact that certain patterns of behaviour that seem sensible to the individual can have unwanted results for the collective. Or, vice versa, behaviour that is sensible viewed from the collective may seem meaningless from the point of view of the individual. Moreover, there is the rather complex question of the position of future generations in societal decisions. Here, we might consider that the basic view is a matter for the individual, and that collective measures should merely as far as possible implement the wishes of the living. But we might also, in a philosophical mood perhaps, think of future generations as independent groups with the right to be represented by a guardian ad litem, as it were, when collective decisions are made. It is not obvious that people should have the same influence on collective decisions regardless of whether the decisions concern us here and now or whether they concern future generations. We already practice decisions taken by expert advice. There are surely many who feel that such a procedure is of particular relevance in decisions concerning future generations.

In a society which is not the land of Cockaigne, there will be conflicts between wishes for the future and wishes for the present as well as between different wishes here and now. In the following, we shall consider two models which can help to clarify these two kinds of conflict.

## 6.2 On the so called time foreshortening

Let us imagine that a person or group is able to carry out the following kind of transaction: Today and in the immediate future it is possible to make certain efforts or sacrifices, and as a reward receive a flow of services in some future time. The general question arising is whether the transaction is a clever one. A more specific example may make the problem somewhat clearer.

Suppose that in a given year it is possible to make an effort or sacrifice which will bring about either a flow of services,  $a$ , which is constant and of infinite duration, or another flow,  $b$ , which is larger than  $a$  for some years, but

which then decreases and comes to a complete stop after a certain time. We assume that there exists a common measure for the effort in question and the two flows of services. (Of course the problem would be simple if everything was measurable in money.) We shall also assume that the original effort or sacrifice may be larger or smaller, and that the effect of an increase of effort is simply a corresponding increase in the two flows. Two important questions then arise. Firstly, whether, and to what extent, either of the two projects is advantageous and secondly, which of them is to be preferred. Economic theory has developed a large apparatus for analysing this kind of problem. An important tool there is computation of interest rates. We shall try to argue that this apparatus is not necessarily as useful in problems concerning whole societies as in those concerning an individual or a small group.

Imagine at first that the problem concerns a private individual. Intuitively, it is obvious that his view of the matter depends on his circumstances today and on what he expects from the future. There is also the question of his attitude to the present and the future, more explicitly his degree of *time foreshortening*.<sup>9</sup> We asked firstly how large his effort will be, and secondly, which of the alternatives he will choose? Oddly enough, it is the case that under certain conditions which are usually fulfilled for the individual in modern society, these two questions can be considered quite independently of one another. The condition to be fulfilled is that everything can be evaluated in money. In that case, he simply calculates which of the two projects has the largest present value, using the current market discount rate. He can then use the monetary profit to buy the flow of services he prefers. The question of how much he will advance, however, is more complicated. If the stake represents a sacrifice, he may well not find the venture worth his while. This is where his views on the future, and his time foreshortening in particular, come in.

But what if the problem were one concerning society as a whole? One difference in particular is fundamental, namely the following: For society as a whole, the choice of project is often irreversible. Then, the problem of which project to choose becomes far more complicated. Formally, it is of course possible to calculate discounted values, but then the two projects have first to be evaluated under the assumption that society will have to *live* with them as long as they last. An example could be two ways of utilising a certain area. One alternative could be recreational purposes, another industrial development that would make the area unfit for recreation for a very long time. The point here is not the initial sacrifice, but a decision with consequences

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<sup>9</sup>Time foreshortening: When future conditions seem smaller, less important the further away they are. TN

far into the future. In order to carry out ordinary calculations of profitability, one would have to evaluate the correct prices both from the present point of view and from the point of view of a distant future.

A more general description based on the above example might be as follows. An individual can provide for his successors in one of two ways: by leaving them useful things, or by leaving them money to buy things for themselves. A society, however, cannot provide for future generations by leaving them money, at least not in the country's own currency. It can only leave to successive generations the country as it has been shaped by activities and decisions up to the present. The implication is that society cannot free itself from considering what is beneficial for future generations, and how to stimulate people here and now for this purpose.

If a society has a low degree of time foreshortening, it shows consideration for coming generations. However, the valuation of long term results is nonetheless important, since decisions concerning the future create processes which are irreversible.

The individual may notice that nature and the environment deteriorate, but this happens outside his reach. He will then make an effort to compensate his own descendants by leaving them something he can control, e.g. money. He then involuntarily, together with millions of other citizens, often in small matters, contributes to the gradual deterioration of the environment. The contribution is involuntary because he wishes to contribute to a better environment, but his own efforts are too small to have any effect. A collective effort is needed, but will not happen if the appropriate decision making apparatus is lacking. This brings us to the subject of the next section.

### **6.3 The 1/N problem**

The above rather odd title is intended as a common term for a phenomenon that occurs in many contexts and several shapes in almost any society. The phenomenon may be described as follows. Assume there is a job to be done, with results that will give satisfaction to many people. The job can be completed if all these people make a certain effort, and for each individual the outcome more than compensates his effort. However, an individual can think: If I shirk, it will make very little difference, because there are so many others left to do the job. But if each individual behaves like this, the job will not be done. The final result will be to everybody's disadvantage. We could mention lack of community spirit, but often this is not the cause. What is lacking is an organ of coordination, an administrative apparatus, to give people the opportunity by common efforts to create something everybody wants. A good illustration from daily life is the amusing picture we sometimes

see in the streets of Oslo, when a large team stretch a cable, coordinated by a singer.

We shall discuss the problem in more detail, but I still think an example is equally as instructive as a more general analysis. We shall consider an illustration, which although simplified is not entirely unrealistic.

Consider a society consisting of 10 districts that are fairly similar, have about the same number of inhabitants and that moreover each possesses a waterfall more or less identical in each district, and not yet destroyed for hydro electricity. Assume that developing the waterfall in one district would give each inhabitant an extra yearly income of 1000 kroner. Assume moreover that people in all ten districts, including the people living in the district where development is planned, have a certain preference for intact waterfalls. In each district, each inhabitant would be willing to pay, for example, 50 kroner per year in order to save the waterfall marked for development. We then immediately see that it is impossible for one single district to finance preservation of the waterfall, as is the case for all nine districts taken together. They would only be able to pay the inhabitants of the development district 450 kroner each. For inhabitants in the development district the economics of the situation is as follows: Development earns them 1000 kroner annually, while they lose environmental values worth 50 kroner, giving an annual net income of 950 kroner.

The above computation is equally valid for each district. The question then is, what could prevent the nine other districts from developing their waterfalls. Each would like an additional income of 950 kroner per habitant. And we have seen that the inhabitants are not willing to buy the preservation of the one waterfall. In order to preserve the nine other waterfalls, it must be possible to offer the nine other districts the same income as in the development district, 950 kroner. Then, people in all other districts would have to pay nine times 950 kroner, altogether 8 550 kroner, or 855 per inhabitant in each of the ten districts. After this “roundabout”, the situation would be as follows: Every district apart from the development district would have received 950 from the other districts while paying out 855 kroner per inhabitant, a net income of 95 kroner per inhabitant in each district, including the development district. The same would be the result of sharing the income of the development district equally between all districts. Here, in a sense, the development of one waterfall is economically justified. But if the inhabitants genuinely wish to preserve nine waterfall, things could be arranged in a much simpler fashion. The government could allow one district to develop its waterfall, on condition that the extra income be shared with the other districts. Or the government could tax the development district 855 kroner and share the revenue with the rest of the population.

Let us change the example slightly and assume that all inhabitants are willing to pay 100 kroner each to preserve the waterfall. It is easily seen that this amount is sufficient to save it. But we also easily see that the efforts of each separate district need to be *coordinated*. The matter can be arranged in one of three ways, all giving the same result. The districts can agree to leave the waterfall in peace, or they can levy a tax of 900 kroner in each district and pay this amount to one another, or the central government can tax development of a waterfall at slightly over 900 kroner. But if efforts are not coordinated in this or a similar manner, the result will be the same as for the labourers without a work song.

It is not difficult to draw a general conclusion from the above examples. In each case, there is a something which is large from point of view of the individual, and it is a collective good (or ill). Therefore, the connection between effort and result becomes near invisible to the single little man or group. There is no incentive, as they say, for him to act unless he acts from emotions different from the connection between effort and outcome.

Now, unfortunately, many great matters of contemporary relevance, and where procrastination may be feared, concern collective goods or ills that are very large compared with what a single individual is able to achieve on his own. For instance, it is hard to imagine a single family having an incentive to use light and clean oil for heating if the heavy oil is cheaper, and if they do not consider other effects than the pollution directly touching themselves ( I am disregarding their own curtains). The family in question would have to be rather stupid to buy the more expensive oil unless they were certain that nearly all others would do the same. The addition or subtraction of sulphur generated by the single family is in practice nothing. And this is true even if the family had a time foreshortening of nearly zero.

We can therefore say, regarding the problem of pollution, that it has two important aspects. On the one hand, there is the question of how much present ordinary consumption has to be reduced in order to combat pollution to the extent that most people want. On the other hand, there is the question of how the people's wishes can be fulfilled. This is where the  $1/N$  problem, as we have called it, enters with full force.

There is no matter where both the question of considering the future and the problem of procrastination are more important than in the world's population growth. We shall make some fairly short remarks on this problem since it is well suited to illustrate some of the points made above.

## 6.4 Some remarks on population policy

One more child in a family in the first place influences the well-being of that family. The family's ideas of the future are also directly affected. The effects depends on many factors, of the social environment, and not least on how densely populated the society is, and on the expected future development in this respect.

One extra child will also, of course, increase the total population, but the effect of that one child is too small to be of importance for decisions in that single family. For society as a whole, it is of course the *total* number of births that is of relevance.

If the present population is already large, or is expected to become so in the future, this may reduce the wishes for more children in a family.

We must distinguish sharply between the various effects discussed above. Moreover, we must be careful to distinguish between what the single family regards as causes and what they regard as effects.

Let us consider an ordinary family consisting of husband, wife and  $n$  children, and let us imagine that it is meaningful to assume that they consider the further development of the size of the family. In particular, let us assume that they consider having one more child in the near future, and that it is not unreasonable to imagine them discussing the issue with a social worker. We shall not strive to create a strong "theory of preferences", just mention some factors of especial interest.

The first factor, and one which the family itself partly is able to influence, is the further development of the number of children in the family. The number of children will affect the economy of the family, and its possible way of life. The family may have certain ideas of how the children will be able to live in the future. Here, it might be of importance what the parents believe about the future size of the world population, because this might affect the well-being of their children. However, for the individual family the development of the society's total population is a *datum*, about which the family may know some predictions, but for which the number of children in a single family is of absolutely no importance.

It is clearly meaningless to preach family planning to the single family, arguing that the world is overpopulated. The family may well be aware of this, but it is of no consequence for the size of their own family. If the individual perhaps considers the population size, it will be for an entirely different reason, namely that overpopulation may create difficulties for his own children in the future. In other words, existing or future overpopulation may diminish the number of births, but this is quite different from asking a family to limit their number of children because of overpopulation. One might



say to the individual family that, considering their own interest, it is not sensible to have many children because others have already made the world overcrowded. It is a paradox that, if social workers were able to persuade millions of families, each family could with truth tell their counsellor: “You lied to us!”

Another kind of guidance, or rather information, might be meaningful, although not altogether pleasant. Suppose the government decided on certain sanctions against production of children. Suppose also that a social worker was sent to explain the matter to each single family in order to obtain general adherence. There might then in principle be a chance, because there would be a collective policy, and the hopeless  $1/N$  problem would not arise.

The problem of population policy exhibits certain traits different from other fields where the  $1/N$  problem is the difficulty. But it may not be impossible to sketch a formal expression for the social preferences. Perhaps the following magnitudes might enter:

- $F(\tau)$  = number of births per annum
- $D(\tau)$  = number of deaths per annum
- $N(\tau)$  = population at time  $\tau$
- $\rho_t$  = rate of discount or time foreshortening at time  $t$

If then  $U$  is a function representing intensity of utility or well-being, having the property that a large  $U$  is an advantage, we could perhaps imagine that the problem was to maximise:

$$\int_t^\infty e^{-\rho_t(\tau-t)} U\left(\frac{F(\tau)}{N(\tau)}, \frac{D(\tau)}{N(\tau)}, N(\tau)\right) d\tau \quad (30)$$

while taking into account that

$$N(\tau) = \int_t^\tau (F(s) - D(s)) ds + N(t). \quad (31)$$

In equation (30), the variables  $F/N$  and  $D/N$  have a “personal” aspect, they measure something that on average concerns the individual family. The variable  $N$ , however, is a collective good (or ill), affecting, on average, the individual. If, then, we had knowledge of causal relations between  $D$ ,  $F$  and  $N$ , (which in part we have), it might be possible to imagine a kind of social maximum of (30). But by what means? At present, we seem to act mostly to diminish  $D$  relatively to  $N$ , that is, to increase  $\dot{N}$ . In this case, collective action is to a large extent accepted. But how to influence  $\dot{N}$  via  $F$ ? Above, we discussed the arising difficulties.

One possibility of influencing  $F$  is information about contraception when people individually want it. This is simple enough. Influencing  $F$  by asking people to do something they do not want to do is something else again. The problem here is not the really big families, but the many middling families that taken together contribute to a formidable population growth. For the time being, it seems that people's individual goals add to a large positive  $F - D$ , while at the same time  $\dot{N}$  should not be too large. And people want to decide  $F - D$  for themselves, while letting others take care of  $\dot{N}$ . This seems not easy to achieve.