Personal control and commons dilemma: predicting prosocial behavior in CPR problems.

by

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The aim of this presentation is to try to reinterpret CPR problems using the concept of psychological control. It is an attempt to apply three-factorial model of personal control, described in details elsewhere (Kubicka-Daab, 1988), to the explanation and prediction of individual behavior in CPR situation. It should be noted here that the focus of the analysis below is on individual and his or her motivation to cooperate with others, while not on the patterns of economic decisions or on the prognosis of the development of the resource. On the other hand, it seems obvious that the fate of the common resources, especially those managed spontaneously, in the absence of external administration, depends just on individual behavior of users. Thus the insight into the "internal world", to use E. Ostrom's term, of particular decision makers, can help in the prediction of widely understood outcomes of CPR situations. The problem is how do we conceptualize this internal world of the agents, or, to put it more technically, what assumptions do we make about the nature of human motivation and decision-making processes. Majority of CPR researchers employ the classical economy model of costs-benefits analysis, (E. Ostrom, 1989). This is probably the most popular theory of decision making, but obviously not the only one. It sounds very convenient and elegant, but, together with the growth of more sophisticated empirical data on decision-making processes, this kind of approach has been recently criticized in psychological literature, (e.g.Montgomery,1984, Baron, 1988, pp.302-3, 319). The same is true for another very popular formal model of motivation and decision-making in the same time, so called model SEU (subjective expectancy x

utility), which has the same roots as cost-benefit analysis theory, namely the assumption of a perfect rationality of human information processing. Both benefit-cost analysis and model SEU require from individuals the capacity of reformulating their interests,goals,hopes and desires in terms of some measurable quantities, good knowledge of probability theory, and at last, mathematical skills. However, as data indicate, people systematically violate normative principles of rationality, both when perceiving utility and probability (which makes the reliable employing of SEU algorithm impossible), and in weighing differently positive and negative outcomes (which complicates the benefit - cost analysis). The scope of this presentation does not allow for more detailed description of biases from normative prescriptions, I will only mention such effects as: intransitivity of preferences, contingent weighing, certainty effect, reflection and framing effects, anchoring phenomenon (all discovered and described by Kahneman and Tversky; 1973, 1982), and the fascinating concept of dominance structure in Montgomery's process model of decision-making. Data of that kind indicate that people cannot perform the necessary formal operations prescribed by normative models even when they are asked for it, thus raising doubts, whether they try to use these models at all where not encouraged.

I will argue in this presentation that the concept of psychological control can be view as a kind of alternative approach to the problem of human motivation. When it was first introduced to contemporary psychology by J. Rotter (Rotter,1966), it was thought as directly related to people's estimation of probability of future successes, one of the factors in classical model of motivation. Further evidence, provided by learned helplessness theory (Seligman, 1975; Abramson, Seligman, Teasdale, 1978), connecting perceived

lack of control with decrease in such basic motivation as a will to live, also suggests that it is maybe more adequate to view human action and choices as based on perception of control or a sense of personal agency, instead of complicated calculations of expected utility of alternative options. Some data indicate that, in decision making situations, people exactly know what their choice will be long before they start any formal computations, which, if made at all, serve rather to justify decisions already settled (Montgomery, 1984). Obviously, one may argue that people can calculate expected utility or benefits and costs unconsciously, and that is certainly a possibility, as the idea of intuition being nothing else that preconscious access to the unconscious information processing. However it seems unlikely, especially for those people who fail to make proper computations consciously. It is usually assumed that for any operations in order to be performed unconsciously it usually takes first to make them smoothly on the level of consciousness. Thus I will argue that the concept of perceived control cannot be reduced to the unconscious calculus of probability and utility, at least at the phenomenological level. Of course, people asked to estimate their chances for success and the value of it, can answer to such questions (and in fact do that in countless psychological questionnaires), but they do not do it spontaneously. They just feel more or less able, competent and responsible to do certain things.

The model.

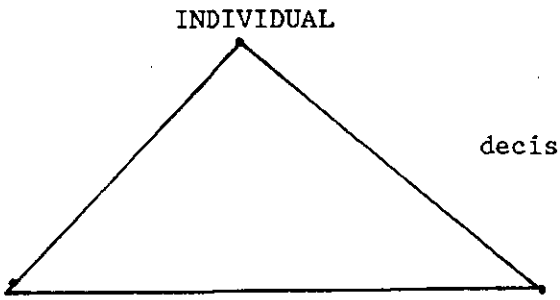
The introduction of the concept of personal control to the analysis of the common pool resources problem may be of some help in the creation of more dynamic and open model of CPR problems then the classic one, as postulated by

E. Ostrom, (Ostrom, 1989, Gardner, Ostrom, Walker, 1989). Such a model should take into consideration some additional factors, absent within the classical framework, and therefore account not only for failures (as previous theory did) but also for successes achieved by appropriators in maintaining the resource. Those factors which will be of particular interest for me here in relation to the concept of psychological control are: number and position of appropriators, rules used by appropriators regarding utilization of the resource, level of information accessible to the appropriators and the dependence of appropriators on the resource. First, however, I will briefly present an outline of the model of personal mastery.

The term "mastery" is used here to describe the joint effect of possessing by an individual of three kinds of control over the outcomes of his or her actions, namely: cognitive, decisional and behavioral. The term cognitive control refers to the knowledge accessible to subject, regarding causes-outcomes relationships within the area of interest for individual, in other words, someone has cognitive control when he or she can predict what actions can bring about desirable results.

The concept of decisional control can be defined as the freedom to choose the means of realization of the goal. Freedom is understood here as lack of external constrains, so the choice eventually made depends only on an individual (in terms of attribution theory, it can be internally attributed). In the most simple case, the choice exists between taking the action and withholding it. The decisional control is often represented in individual's consciousness as a sense of influencing something and can be expressed by such terms as:" having an impact,affecting certain things". And the last but not least, the term behavioral control refers to the ability to perform the chosen

course of action, in other words to the efficacy of the person. However, the term "perform" has a very wide meaning here, it refers not only to the direct action undertaken in person, but also to the capacity of organizing (indirectly) the work in a most successful way. What was told up to now can be graphically depicted as in figure below.

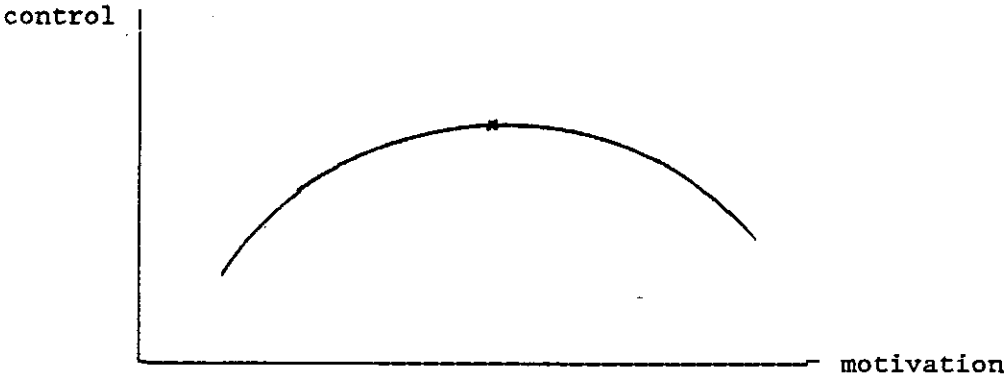


The model contains some additional assumptions.

Firstly, as it follows from formulations presented above, the personal control (or mastery) is not an "all- or- nothing" kind of phenomenon, it can be subject to graduation. It is probably equally difficult to imagine both a situation, when all kinds of control are totally in the possession of an individual as the situation, when he or she is completely deprived of it. At least, as far as the decisional control is concerned this last case seems to be highly improbable.

Second important assumption refers to the notion that psychological control can be subject both to objective and subjective estimations, that is it can be investigated from the outside of a given individual and in the same time is perceived (more or less adequately) by him or herself. Inadequate perceptions of control are often refereed to as illusions, I will return to that point later. Subjective estimations of control are called "sense of control" or "control beliefs", and this is what is most directly connected

with motivation. The exact pattern of this relationship is not yet established, (my recent research project at Warsaw University deals with this matter). However, two hypotheses can be formulated. First, that the relationship between perceived control and motivation is probably mutual and is of the kind of a positive feedback loop. The more control one has, the more is one motivated to perform actions that are under his or her control, and, in turn, the motivation and interest in particular area leads to attempts to increase the amount of control over it. However, the second hypothesis would assume that this pattern is the case only until some optimal level of personal control is reached, and then, the motivation starts to decrease. We usually have no interest in doing things we have almost complete control over, we perform them automatically. So the assumed relationship between control and motivation would have a curvilinear shape of the reversed U,(as illustrated in the figure below), but I would argue that majority of human behavior can be found below the threshold of optimal control.



Subjective estimations of control, likewise the objective ones, also have the gradual character. Moreover, these subjective estimations are always made on the basis of the comparison between the actual perceived level of control and a reference point of ideal standard. It can be hypothesized that

these ideal standards are the same as the optimal level of control, described in reference to motivation. Whatever their nature is, it is important to realize that such standards exist and can vary between people, (although it should be noted that the measurement of those standards is very difficult due to the lack of proper techniques - the exemption is a very general Desire for control scale by J.Burger, 1984). It seems to be wrong to accept the assumption, made e.g. by learned helplessness researchers that people always aspire to exert the maximal possible control. Some data indicate that such a situation can be not only boring (as I've already mentioned), but also, under certain conditions, (especially when the decisional control is ascribed to an individual, who lacks the cognitive and behavioral ones), threatening. For some people, the freedom of choice as well as an independent control of behavior is an aversive experience, which they want to avoid and try to transfer control to other persons, (Miller, 1980; Rodin et al. 1980, or the famous Fromm's analysis in the "Escape from freedom").

Third assumption concerns the differences between estimations of control made before and after an undertaking of the action. From that point of view, the problem of the "mirror" relationship between the perceived decisional control before an action and the further sense of responsibility for it is of special interest. Both in the case of the perception of others and autoperception, the more freedom is associated with given behavior before performing it, the more responsibility is attributed to the agent afterwards. As far as the post hoc estimation of behavioral control is concerned, a lot is known now about cognitive tricks people make when trying to justify the disappointing results of their behavior. Since these data are not of the direct relevance to the scope of this presentation , I will omit it.

And , at last, I would argue that the model described above can be applied to any of the gains or purposes of human action, i.e. both to these most detailed and operational and these most general and abstract. As it is usually accepted in the psycho- and sociological literature, I assume that cognitive organization of purposes is of hierarchical kind. The term hierarchical has a double sense here. First, it means that the gains from the lower stages of hierarchy are in the same time means serving the realization of gains from the higher stages. We can refer to it as operational hierarchy. Second, it is assumed that another hierarchy exists, that of values, what means that different goals have a different value for an individual. I employ here the Parsons's concept of value. In his works, value is understood as an "element of the symbolic system, which serve as a criterion or a standard for choice between open alternatives", (Parsons, 1984).

This two orders, operational and evaluative one can mutually overlap, but they also can be completely separate or even opposite. The evaluative hierarchy is of special importance in situations, when an individual has to choose between options in which he or she perceives the same amount of control.

The model described above was thought as a general framework for the organization of empirical research. There are several hypotheses that can be derived from it and subsequently tested, in psychological laboratory and in the field as well. Two basic research areas are the most appealing to me: one is the nature of the relationship between the perception of control, motivation, and importance of the goal; second is the problem of mutual connections between kinds of control marked off in the model. Some hypotheses concerning this first area have been already mentioned, I will go back to them

later, now I will just signal some points connected with this second one. There are some, however incomplete, data indicating that the perception of ~~the~~ one of the kinds of control can influence perceptions regarding the other two, especially in the situations when people do not have data sufficient for certain estimations. In such cases, people go beyond information provided and guess how ~~many~~ much control they have. This can cause many possible illusions (i. e. inadequate perceptions) in control and efficacy estimations. The best known is so called "illusion of control" (Langer, 1975). The term has ~~made~~ had a ~~real~~ successful career in contemporary psychology and is being used in very wide contexts and meanings. I will try to define this phenomenon using categories employed in the model described above, since in E. Langer's conception there is only one, general concept of control. The illusion of control, as it was first demonstrated in laboratory, can be described by circumstances, in which people overestimate the level of their decisional control on the basis of the perceived level of behavioral control. In fact, mere conviction, suggested to them by an experimenter, that they would deal with the so called skill and presumably easy task (when in fact that was the random, unsolvable one), caused very exaggerated perceptions of control. It can be hypothesized that subject's expectations of positive results in the task (behavioral control) contributed to their illusive perceptions of decisional control over it, despite of the fact, that they did not posses it at all. Not very ethical experiment, perhaps, but very indicative of the fact, how unsound the premises of human judgment can be. However, as far as the retrospective (i.e. after performance) estimations of decisional control are concerned, the reverse effect has been observed, called the "success-failure asymmetry". It is a phenomenon, pertaining to the attribution of responsibility processes. The

point is that people ascribe to themselves different amounts of responsibility (or, as was indicated, decisional control), depending on the value of their achievements: overestimating it in case of success and denying it when failures occur.

Apart of the two main research areas mentioned here, the theoretical problems related to standards or desires for control also deserve of empirical analysis. However, it requires the construction of the proper measurement technique first. I will not go into it now.

Application of the model to the CPR.

Now I will try to show some possible ways of application of the model to the domain of CPR problems. I will argue that, at least some of the factors distinguished by CPR analysts (E. Ostrom, 1989; Gardner, Ostrom, Walker, 1989), that can contribute to the self-organized attempts to maintain the resource, can be formulated in terms of psychological control experienced by appropriators. According to the hypothesis,postulated by the model, which connects the amount of perceived control with the motivation, this theoretical manipulation can account for the "missing link" between the objective, external elements of situation, and individual's behavior. One remark should be made here, however. Whenever the term motivation will appear in subsequent paragraphs, I will mean the so called prosocial motivation, in that case, the motivation to contribute in any way to the maintenance of the resource. Of course, the very paradox of CPR problems lies in the fact that this kind of motivation serves in the same time personal, "egoistic" purposes, since everybody benefits, when resource survives. But I would rather still use the term prosocial for motivation of that type, to more clearly juxtapose it to

the most selfish pattern of behavior, that of free riding. This kind of behavior, considered as a baseline here, the simplest and perhaps the most attentive one, I will identify with the lack of motivation in the proposed sense. Of course I am doing this only for analytic purposes, not claiming that free riding behavior is not motivated at all. However it can be mentioned here that some theorists restrict the term motivation to the most mature, conscious and cognitively elaborated forms of behavior initiation, juxtaposing them to the behavior ruled by impulses or just single motives. It may be, that free riding can belong, at least to some extent, to this second behavioral category.

Cognitive control.

The most direct analogy of the model presented here to the new, "enriched" analysis of CPR (E.Ostrom, 1989) concerns one of the factors marked off there, namely that of the amount of information accessible to appropriators. It seems to me that one can safely call this factor cognitive control. The only thing I would add is that maybe not only mere amount and credibility of information should be analyzed, but also its content. It seems to me, that at least three main categories of such information can be thought, namely:

1)information about the resource itself (conditions and prognosis, reproduction rate, variability of its units, technological facilities),

2) information concerning "stable human factors" in relation to the resource, i.e., the number, positions of an individual and other appropriators, operational rules created and accepted by the community of users,

3) information regarding "dynamic human factors" i. e. considering simply about the currently changing behavior of other appropriators and its consequences.

It seems obvious, but maybe worth noticing that these are quite separate categories of information ,and that knowledge about one of them does not necessary imply good orientation in another one. Apart of the "objective" knowledge, there is a problem of the attention of appropriators which may or may not be evenly distributed among these categories. This, in turn, may contribute to the ideas and choices individuals eventually make regarding the improvement of the resource functioning. For example, some of them may stress changing technology as the most important factor of progress, whereas other may want to informally press co-users towards the change in their particular behavior.

Decisional control.

The problem of decisional control possessed by appropriators of the CPR resources would resolve itself into identification and enumeration of these factors that delimit the scope of individual's impact on managing the resource. In other words it is the freedom of choice they have in pursuing different options. Since the freedom of choice is defined in a model as a lack of external constrains, it follows that the smaller number of the resource users, the less constrains would each particular person experience. So, the less people engaged in managing the resource, the more decisional control they should perceive. Such reasoning is also contingent with the notion of so called diffusion of responsibility (Latane' and Darley, 1968): the decrease of prosocial motivation together with the increase of the number of potential

agents. As it has been already mentioned, the two concepts, that of decisional control and that of responsibility are very closely tied.

So, the number of appropriators can be the basic, the most simple way of operationalization of the concept of decisional control in CPR context. However, one cannot stop at that, unless accepting the assumption about equality of positions of appropriators. There are different kind of positions that should be taken into consideration. Three of them are of special importance, namely: "geographical" (from the point of view of access to the resource), formal, and social (informal). In each of these spheres different hierarchies can exist, not necessarily overlapping. The position in any of these hierarchies, in turn, is connected with the amount of decisional control, that can be exerted by an individual, in relation to managing the resource. And of course, the higher position in any of these hierarchies, the greater possibility to control. Serious problems can arise, when those orders are in conflict , and top appropriators from different hierarchies do not mutually agree.

The last factor that can limit the individual's freedom of choice is constituted by operational rules, accepted and used by appropriators. It should be noted, however that this element of CPR situation does not influence all users to the same extent. Some of them, again those on the top of hierarchy, can have, in the scope of their decisional control, the possibility of changing existing rules.

Behavioral control.

The concept of behavioral control has been defined as an ability to successfully perform the sequence of action, chosen by an individual and has

been identified with the concept of efficacy. Operationalization of this concept in the context of CPR is probably the most difficult and controversial, but , in the same time, this factor seems to be of special importance. Let me note, first, however, one significant formal difference between the perception of this kind of control and the other two. While "data-base" for estimations of cognitive and decisional control are accessible to an individual before undertaking an action (he or she can decide that has no cognitive or decisional control at all, but can be sure about it), the sense of personal efficacy can be only guessed or hypothesized. It does not directly stem from the structure of the situation. Such predictions of behavioral control are based on previous experiences of individuals in similar circumstances and, in turn, their eventual performance in given situation, will contribute to their subsequent expectancies. These are assumptions of classical now, social learning theory, formulated by Rotter (1966). They reflect the crucial role, which the perception of contingency betweens actions and results has for all human beings. In CPR context, such direct contingency cannot be experienced by an individual. First, because there is the configuration of behavior of all appropriators, which decides about the subsequent conditions of the resource. Second, because the results of one decisional and behavioral "period" may not be immediately visible. So, predictions of behavioral control in CPR's must assume different, compound form , like : "if I do a (b,c....) and others do a, (b,c.....) then we probably .....". People have to take into consideration the behavior of others and realize that their action is in fact common. But, apart of this, very important difference, the principles and processes assumed of the social learning theory, may still work, i. e. people observe contingencies between

the common action and given consequences, evaluate obtained results, and project their inferences into the future, formulating certain predictions. These is the most dynamic element of CPR problems, since it accounts for changes in individual's behavioral control and behavior itself, even in the absence of changes in perceived cognitive and decisional control. It is also a fascinating subject for scientific observation, how this perception of common efficacy in the past can change individual choices in the future. It is most probable that the more evident and less delayed changes in CPR conditions following common action could be observed, the greater sense of behavioral control.

Importance (value) of the goal.

As I've mentioned it previously, the model assumes that an additional factor may contribute to individual's motivation, namely the value that given goal has for an agent. This is especially important when one faces two competitive, from the point of view of amount of control, behavioral options. In CPR problems, the degree of , widely understood dependance of appropriators on the resource can account for these variable and will, of course influence their motivation.

Conclusions.

In the above presentation I tried to show some possible applications of the concept and the model of personal control to the theory of common pool resource management. I assumed that this variable can be helpful in predicting individual behavior, it is maybe of less importance for economists or lawyers interested in CPR, although the extension of this model to the level of the

hole group or communities can also be imagined, (e.g. decisional control as a degree of independence of the group from the government , the global amount of information accessible to the group as a cognitive control etc.).
Since this presentation was thought as primarily theoretical, I did not go into methodological details of operationalization of each of constructs marked off. However, it can be imagined as possible and relatively easy, in laboratory setting, to manipulate such variables as: number of subjects-appropriators, positions ascribed to them, amount and content of information provided (like specific way of describing the resource), paying attention to special kinds of information, feedback concerning the results of each instance of common action, and, finally, experimentally induced dependence of subjects on the resource. This way, several experimental groups can be created, differing in the amount of ascribed control, and they can subsequently be compared in respect of dependent variable, i.e. level of prosocial motivation.

I will conclude this presentation by summing up main hypotheses that can be derived from control theory analysis of CPR. This time I will try to present them, using CPR problem terms:

1) the more dependent the appropriator on the resource, the more prosocial his motivation is;

2) the larger amount and the more reliable information appropriators have concerning the resource, the more willing they are to act for the benefit of the resource, direction of their action depending on direction of their attention in information processing;

3) the less appropriators, the greater prosocial motivation of each of them;

↓
or greater marginal

4) the higher the position of given appropriator in any of hierarchies marked off, the larger willingness to act for the common benefit, (of course, here alternative hypothesis can be formulated regarding possibility of taking advantage of decisional control connected wit distinguished position);

5) the less amount of articulated rules and the more flexible they are, the greater prosocial motivation of appropriators;

6) the more visible and immediate results of common action, the higher willingness to act for the sake of common good;

7) depending of the evaluation of the results of common action, different extent of ascribing the responsibility for the outcomes among users of the resource; high level of perceived responsibility in the case of success, denying responsibility when failure.

Apart of this direction-hypotheses, an analysis can be made which one of the variables taken into consideration is of the most decisive value in relation to motivation processes.

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