

What is freedom ?

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“Ce qui, de tout temps, a attaché à la liberté le coeur de certains hommes, ce sont ses attraits mêmes, son charme propre, indépendant de ses bienfaits...Qui cherche dans la liberté autre chose qu'elle même est fait pour servir”¹ (Alexis de Tocqueville)

1 Freedom in economics

The notion of *freedom* occupies a paradoxical position in economics. From the popular press and medias, one could get the impression that freedom is at the very heart of the discipline. Economists seem indeed literally obsessed with *free* market, *free* enterprise, *free* trade, *free* exchange, *free* entry, *free* choice, and so on. This impression would also be nourished by the writing of a few well-known liberal economists such as Buchanan (14), (15), Hayek (35) or Friedman (25), (24) who have put freedom at the center of their eloquent pleas for limiting the scope of government interventions.

The impression is, however, quite different when obtained from the austere scholarly articles and books, devoted to the *normative* branch of economics, that formulate precise criteria for appraising the "ethical goodness" of alternative states of affairs. For, until recently, *none* of the criteria examined in normative economics - be they called "efficiency", "consumer's surplus", "social welfare" or "equality" - have been connected in one way or another to the notion of freedom. Instead, it is the individual' *subjective preference*, and its presumed connection to the individual's *well-being* or *welfare*, that has been the main ethical ingredient used to justify these criteria. It has become common, after Amartya Sen (65), to call *welfarism* this view, which still dominates academic economics nowadays, that two alternative states of affairs that produce the same distribution of individual welfare should be considered normatively equivalent. There is obviously no role to play for freedom in this view except, possibly, as an *instrumental* mean of achieving larger welfare.

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¹"What, in all times, as attached to freedom the heart of certain men are its own appeal, its proper charm, irrespective of its benefit. He who searches in freedom for something else than freedom is borne to serve" (free translation).

Things have changed a bit in the last twenty five years or so when a dissatisfaction with welfarism, fed to some extent by the philosophical writings of Arneson (1), (2), Cohen (16), (17), Dworkin (21), Rawls (60) and Sen (66), (67), (68) among others, has given rise to an abundant literature that has explored alternative *non-welfarist* foundations to normative evaluation. Echoing the common perception of economics as a freedom-obsessed discipline, freedom has emerged in this literature as a natural complement, if not a substitute, to welfare as a plausible ingredient for normative appraisal.

This obviously requires a definition of what freedom is. This entry will discuss the main approaches developed in economics for providing this definition.

2 A central concept: the opportunity set

In much of the economic literature, individual freedom is examined through the formalism of *opportunity sets*. Any such opportunity set is interpreted as containing all options - assumed to be mutually exclusive - that are available for choice to the individual whose liberty is being evaluated. The budget set of standard consumer theory, which consists of all consumption bundles that a consumer can afford, given her wealth and the prevailing prices, is an immediate example of an opportunity set. But there are others, like, for instance, the set of all decisions that an individual can take within the realm of legality or the set of all candidates that are available to a voter in a particular election.

The problem of defining freedom in that context amounts to that of defining what it means for one opportunity set to offer more freedom than another. It amounts to defining a freedom-based *ranking* of opportunity sets.

3 Negative or actual freedom ?

It is important to note that this formalism of opportunity sets does not *a priori* restrict the nature of the constraints that limit the availability of options. These constraints can be physical (e.g. I do not have the option of playing piano like Horowitz), economical (e.g. I can not afford to have a second house) or legal (e.g. I'm not allowed to sunbath topless on the beach). Yet there are some economists or philosophers who believe that the origin of the constraints that prevent options from being available matters for defining freedom. Hayek (35) (p.12) is clearly one of them when he writes:

“...“freedom” refers only to a relation of men to other men, and the only infringement on it is coercion by men. This means, in particular, that the range of physical possibilities from which a person can choose at a given moment has no direct relevance to freedom. The rock climber on a difficult pitch who sees only one way out to save his life is unquestionably free, though we would hardly say he has any choice”.

It has become common, after Berlin (6), to refer to the notion of freedom that focus on constraints that result from the behavior of the other individuals only - as opposed to those that arise from physical or biological impediments - as to *negative freedom*. While the view that only negative freedom matters from an ethical point of view has eloquent defenders (including, beside Hayek (35), Buchanan (15)²), there are also many writers (like Sen (68), Van Parijs (51) and, before them, Knight (41)) who believe that the relevant practical question is that of *actual* power or opportunity to do things, wherever this opportunity comes from, rather than negative freedom. The formalism of opportunity sets, which leaves completely open the nature of the constraints that define the set, is compatible with both views. It is even possible, as illustrated in Van Hees (76), to consider a multilevel structure of constraints in which one defines first the set of options that are physically (say) available and then, in his feasible set, the subset those options that are legally (say) available.

4 Extent of choice or causation by the will ?

Defining freedom by means of a ranking of opportunity sets may strike one as an overly specific way of proceeding. For one thing, the approach seems to capture only the "extent of choice" aspect of the notion. Yet, there are other accounts of freedom who do not seem to be reducible to the "extent of choice". The most important of them is probably the one that is conveyed by the expression of 'being her own master'. It has been formulated by Kant (39) as follows:

"Will is that kind of causality attributed to living agents, in so far as they are possessed of reason; and freedom is such a property of that causality that enables them to originate events, independently of foreign determining causes".

This definition of freedom, as absence of determination by causes other than the individual's *will*, has irrigated a rich tradition of philosophical thinking, ranging from Kant to Sartre and Berlin. Despite appearances, such an account of freedom is perfectly consistent with the definition in terms of a ranking of opportunity sets. An opportunity set is interpreted, indeed, as the set of options that are available for choice to the individual. This availability, as we just said, can be the result of various causes, which, whatever they may be, are interpreted as being *external* to the individual "will". It is the choice made by the individual, at some later stage, in the set that will be the result of the "will". To that extent, an individual choosing from a "large" opportunity set may be seen as exerting more will power than another one choosing from a smaller opportunity set. Just like an individual choosing not to drink alcohol in a country where alcohol consumption is authorized may be seen as making a freer act than someone forced to abstinence by some prohibitive law.

²'An individual is at liberty or free to carry an activity if he or she is not coerced from so doing by someone else' (p. 10).

It is important, however, to remark that if the approach of freedom as a ranking of opportunity sets *is consistent with* the Kantian notion of liberty as causation by the will, it *does not ride on* it. In particular, one may be interested in appraising the freedom of an opportunity set without believing in the existence of a "will" that governs the individual's choice. Perhaps the individual is not making her choice according to will. Perhaps the individual chooses randomly by flipping a coin. Perhaps she chooses by instinct, or by mechanically maximizing some objective function. As a matter of fact, the notion of freedom that is described here is applicable to animals. A tiger in a cage has fewer opportunities to do things than a tiger in the jungle, even though few would be tempted to express the lack of liberty of the tiger in a cage in terms of the tiger's "will".

The only important assumption that is made in this approach to freedom is the possibility of distinguishing the opportunity set from the choice that is made out of it. The approach, indeed, supposes a tight partitioning between the things that the individual *can* do, and the things that he or she *will* do, whatever are the forces assumed to govern choices.

It can, of course, be believed that the forces that govern choices are of key importance for defining freedom. An individual who makes a choice out of an impulse or an instinct does not act freely (even if the *a priori* opportunity set she was facing was quite large), while, on the other hand, someone who makes a choice out of thoughtful sovereign deliberation is free (even if the available opportunities were few). Although, as we will see, there are conceptions of freedom that make explicit reference to the possible motivations underlying the choice, none of them would go as far as distinguishing a choice made by instinct from a choice made by some "sovereign deliberation of the will". Again, the only distinction made in the approach is that between the things that are available for choice (possibly after the instinctive behavior has eliminated possibilities) and the (usually unique) thing that will be chosen.

5 Defining freedom without reference to the motivations for choice

A certain branch of the economic literature, illustrated by the contributions of Bharat and Nitzan (5), Bossert, Pattanaik and Xu (12), Bossert (10), Dutta and Sen (20), Gravel (29), (30), Gravel, Laslier and Trannoy (32), Klemisch-Ahlert (40), Pattanaik and Xu (52), Puppe (57), (58), Sen (69), (70), (71), Suppes (74), (75) and Van Hees (76) among others have attempted to define freedom without explicitly connecting the definition to the future choice behavior of the individual.

The approach adopted in economics for defining freedom has often been *axiomatic*. That is, some properties, or *axioms*, that the statement "offers at least as much freedom as" could satisfy have been suggested and the class of rankings that satisfy the properties have been derived rigorously. Sometimes, the axioms are so stringent that no ranking can satisfy them simultaneously. One gets, in this case, what is called "an impossibility result". Sometime, there is only one ranking that satisfies the axioms. In that case, the ranking

is said to be "characterized" by the axioms. Finally, it may be that the properties define a (possibly large) family of rankings, which can, sometimes, be written in a convenient form.

It is obviously beyond the scope of this entry to provide a description of all axioms and results contained in the literature. Rather, attention will be limited to a few widely discussed principles and rankings.

5.1 Monotonicity to set inclusion

A first obvious freedom principle that can be applied to a ranking of opportunity sets is *monotonicity with respect to set inclusion*. There are two versions of the principle: a weak, and a strong. The weak version asserts that adding an option to an opportunity set does not reduce freedom. The strong version asserts that adding an option strictly increases freedom. The weak version of the principle is hardly disputable. What conception of freedom would consider that making more options available for choice reduces freedom ?

More disputable is the strong principle that adding options to an opportunity set *strictly increases* freedom. There are indeed several writers who have challenged the libertarian character of this principle by arguing that the addition of "very bad" options, like, for instance, "the possibility of being beheaded at dawn" (Sen (70)), does not necessarily increase freedom.

It seems, however, that this kind of argument, which refers to the value of the option from the view point of the motivations underlying individual's choice, is more a criticism of the attempt to define freedom without explicit reference to these motivations than a criticism of the adequacy of the principle to capture intuition about freedom *given this attempt*. It seems, after all, hardly disputable that adding options to an opportunity set, provided that the individual keeps the possibility of choosing or not the options, enlarges strictly the individual's freedom to choose. If I am given the freedom to be beheaded at dawn upon request, isn't the case that my freedom to end my life in the way I choose has increased ?

A more relevant criticism of monotonicity with respect to set inclusion is its acute *incompleteness*. Suppose that the creation of a network of cycle paths in a dense metropolis leads to a reduction in the space available to automobile traffic. Set inclusion does not provide any clue for appraising the impact of such a creation on the freedom to move around in the city. The cycle paths certainly give more options to the cyclists to move around safely but it removes some of the options offered to car drivers to commute from one point to the other.

While the incompleteness of set inclusion as a definition of freedom can be serious for appraising the freedom to move in a city, it is not damaging when set inclusion is used to evaluate the economic freedom of an individual exposed to a given price system. For in such an environment, the individual's wealth provides a (clearly complete) ranking of the budget sets that coincides with set inclusion.

6 Counting the number of options

An easy way to obtain a complete ranking of opportunity sets that is consistent with set inclusion is to compare sets on the basis of their *number of available options*. This ranking has been informally suggested by Hayek (35) about fifty years ago³. It has been given elegant, and widely discussed, axiomatic characterizations by Jones and Sugden (38), Suppes (74) and Pattanaik and Xu (52). It also appears in various axiomatic investigations, including those of Bossert, Pattanaik and Xu (12), and Ok (48). While the simple definition of this criterion seems to require opportunity sets to contain a finite number of options, it is possible (see e.g. Pattanaik and Xu (55) and Xu (81)) to generalize the criterion to account for sets which, like the budget set in standard consumer's theory, contain uncountably many options.

Should we be satisfied with this definition of freedom as the number of available options? Hayek, as well as more recent writers, such as Van Hees (76), (77) would be probably inclined to answer affirmatively to this question. Yet, if we leave aside the aforementioned "beheaded at dawn" criticism, which applies with equal force here, there are at least two reasons for answering this question negatively.

First, defining freedom as the number of available options entails the acceptance of the principle that all sets containing only one option should be considered, freedom-wise, equivalent. At first sight, this conclusion may not seem very bothersome. After all, an opportunity set offering only one option does not provide any freedom of choice. It seems therefore all the more normal that these sets be considered as offering the *same* level of freedom, that is *none*.

Yet a second thought may make one doubtful about this. Is it that clear that I am equally unfree when I am forced to drink a bucket of sea water than when I'm forced to drink a glass of a Chateau Margaux? Is it that clear that I am equally unfree when I am forced to get a dental surgery without anesthesia than when I am forced to get the dental surgery with anesthesia? To some extent, these questions refer to the value of the options from the view point of the use that the individual will make of them. But to some other extent, there is no compelling reason why all situations in which one is forced to do something should be considered equivalent, especially when the "thing" that one is forced to do is different.

It is possible to address this kind of concern by considering an *additive generalization* of the ranking of sets according to their number of elements. For instance, one could think of attaching a (non-negative) "freedom weight" to every conceivable option and to rank sets on the basis of the sum of the weights of the options that are available in the sets. Comparing sets on the basis of their number of options is just one particular member of this class of additive rules, in which each option is assigned the same "freedom-weight". But there is no reason to limit oneself to this particular member. For instance it may be believed that the possibility of going through a dental surgery without anesthesia has less impact on one's freedom than the possibility of going

³"The question of *how many courses of action are open to a person* is, of course, very important." (p. 13, my emphasis)

through the same surgery with anesthesia. The additive generalization of the counting rule has been discussed by Klemisch-Ahlert (40) and axiomatically characterized in Gravel, Laslier and Trannoy (32). While it enlarges significantly the class of freedom-based rankings of sets that one may wish to consider, this generalization leaves completely undetermined the question of the choice of the weights attached to the options. Without a specific reason for attaching more weight to a dental surgery with anesthesia to one without anesthesia - like, for instance, the fact that any reasonable person would prefer going through a dental surgery with anesthesia than without - why weighting them differently ? There is, indeed, no reason for weighting them in one way or another. But there is no reason for weighting them equally either, and the family of additive rankings of sets have the merit of covering all the logically conceivable kinds of options' weighting that one may wish to consider.

6.1 Freedom and diversity

Another problem with the ranking of sets on the basis of their number of elements, also shared by the additive generalization, is that it assumes the contribution of an option to freedom to be *independent* from the set to which the option belongs. To take a transportation example once again, suppose that we agree to say that someone who is forced to make some trip using a blue car has the same (null) freedom of choice than someone who is forced to make the same trip using a green bicycle. Suppose now that the possibility of doing the trip by a blue bicycle is made available to both individuals. Does this imply that the individual who has now the choice between a blue car and a blue bicycle has the same freedom of choice than the individual who has the choice between a green and a blue bicycle ? Few of us, it seems, would be inclined to answer affirmatively to this question. After all, as Thomas d'Aquina put it some 800 years ago:

'An angel is more valuable than a stone. It does not follow, however, that two angels are more valuable than one angel and one stone'.⁴

Any plausible account of freedom, it seems, should be sensitive to the *dissimilarities* of the options available for choice, and should attach some importance to the *diversity* of choice. By failing to express such a sensitivity, additive rankings fail to qualify as completely plausible definitions of freedom.

Yet, diversity is a delicate notion. In the last fifteen years, significant efforts have been made toward understanding what it means for a set of objects to be more diverse than another.

Some approaches have examined the question by taking as given the existence of an underlying notion of pairwise dissimilarities between the objects, and by defining diversity as aggregate dissimilarity. These approaches have differed according to the information that is assumed to be available on the pairwise dissimilarity between the objects. Some, like Weitzman (78), (79) (80) and Bossert, Pattanaik and Xu (13), have supposed that this pairwise dissimilarity can be measured very precisely by a distance function that en-

⁴Contra suma gentile III. The quotation is taken from Nehring and Puppe (46)

ables one to say things like "the dissimilarity between a blue car and a blue bicycle is ten times as large as the dissimilarity between a green and a blue bicycle". Others, like Pattanaik and Xu (54) or Bervoets and Gravel (8), have made the more prudent assumption that the underlying information on dissimilarity was only qualitative or ordinal in nature.

Other approaches, such as that developed in Nehring and Puppe (46), (47), have defined diversity with respect to an underlying set of attributes possessed by the options as well as a function that weights these attributes.

It is obviously beyond the scope of this entry to discuss in detail this growing literature on diversity, that I have surveyed elsewhere (Gravel (31)). Suffice it to say that much more research is needed to identify the links that connect freedom and diversity.

7 Defining freedom with respect to the motivations underlying choices

7.1 Choices and preferences

From an abstract point of view, a choice behavior can be described by a (choice) function that selects, in every possible opportunity set, a particular option. *A priori*, the choice behavior can be anything. Yet, if it is completely arbitrary and unpredictable, the choice behavior can hardly be used to define freedom.

Yet it is common in economics to assume that choices are not completely arbitrary but are, instead, "instrumentally rational" in the sense that they result from the maximization of *some* objective. There has been a considerable amount of discussions as to what this objective is. Economists working in the welfarist tradition would be probably inclined to say that it is somewhat connected to the individual's personal "well-being" (see e.g. Griffin (34) or Sumner (73) for thorough accounts of this notion). But a great deal of other objectives have been considered as well, ranging from several forms of concerns for others (altruism and, to the contrary, jealousy and malevolence) to behaviors resulting from "a sense of duty" or from the obedience to some moral principle (see for instance Bilodeau and Gravel (9)). The only feature of the objective that commands a large support is its assumed minimal structure: it produces a complete and transitive ranking of all options. It has been shown in classical decision theory (see e.g. Arrow (3) or Sen (64)) that a choice behavior driven by the pursuit of an objective having this structure can not be arbitrary, and must satisfy some property.

Economists refer to the objective that governs the individual's choice - at least when the objective takes the form of a complete and transitive ranking of options - as to the individual's *preferences*. How can these preferences be used to define freedom ?

8 A given preference

If an individual has given preferences over the options and chooses, in every opportunity set, the option that she most prefers, there seems to be an easy answer to this question. An opportunity set offers more freedom than another if, and only if, the choice made in the first set is preferred to that made in the other set. It has become common in the literature, following Bossert, Pattanaik and Xu (12), to refer to this ranking as to "the *indirect utility ranking*". This ranking is clearly weakly monotonic with respect to set inclusion since someone who chooses from a set optimally from the view point of some objective can not loose from the addition of options to the set. If the added options are valuable, she will choose them and will consider the enlargement as a strict improvement. If none of the added options is valuable, then the individual will not choose them and will, therefore, not loose from their availability. Of course, in the later case, the individual will not gain either from the availability of the added option. Hence the indirect utility ranking is not strongly monotonic with respect to set inclusion.

If individual preferences are connected to individual's well-being, then the indirect utility ranking of opportunity sets is precisely the ranking of opportunity sets that would be agreed upon by standard welfarist analysis. If this is the case, the indirect utility ranking of opportunity set does not attach any intrinsic importance to freedom and view freedom, as weak monotonicity with respect to inclusion, as an instrumental means of making achieving larger well-being. If, on the other hand, the given preference does not reflect the individual's narrowly defined well-being but, instead, a more complex "objective" considered by the individual, say after a "free deliberation of the will", to be worth pursuing, then the indirect utility ranking may represent a plausible conception of freedom.

8.1 A family of preferences

It may be held that freedom is, to some extent, the result of the "indetermination" of the individual with respect to her preferences. A natural way to think of this indetermination is to posit the existence of a *family of preferences* that *could* be used by the individual for making choices. Papers who have defined freedom by referring to such a family of preferences include Arrow (4), Foster (23), Kreps (44), Nehring and Puppe (45), Pattanaik and Xu (53), Puppe (59), Romero-Medina (62) and Sugden (72), among others. Two different interpretations have been given to the family of preferences.

First, the family has been interpreted as the set of preferences that the individual could possibly have. When facing an opportunity set, an individual may, indeed, ignore the actual preferences that she will have when making the choices. In such a context of *ignorance of the future preferences*, freedom is considered as a synonymous to *flexibility*. This approach is explicitly adopted by Foster (23), Kreps (44) and Arrow (4) and, to a less extent, by Puppe (59). Once a family of possible preferences that the individual can have is defined, the ranking of sets can be viewed as an *aggregation* of the various indirect utility rankings of the sets, one such ranking for every possible

preference. That is, freedom can be defined as the ranking of sets induced by some aggregation of the multiple "selves" of the individual. There are several ways by which the aggregation can be performed. In Foster (23), the ranking of sets is simply taken to be the *unanimity* of all indirect utility rankings of sets. Hence opportunity set A offers more freedom than B if, for every preference in the class, the most preferred option in A is preferable than the most preferred option in B . A problem with this ranking is its incompleteness. The ranking will, indeed, be unable to compare sets A and B for which there are conflicting views among the individual's multiple selves as to which one provides the best option. Kreps (44) and Arrow (44) have suggested instead to provide a complete ranking of sets that can be thought of as resulting from the comparisons of the *expected value of their best option*, with expectation taken over the class of all possible selves of the individuals. Puppe (59) has also discussed the possibility of ranking opportunity sets according to the recommendation of a "majority" of the individual selves. There are obviously many ways of thinking about how an undetermined individual who admits the possibility of having different "selves" can aggregate these when taking a decision.

A second interpretation that has been given to the family of preferences has been examined in Sugden (72), Pattanaik and Xu (53), Nehring and Puppe (45) and Romero-Medina (62). According to these authors, the family of preferences to which freedom should refer need not be the possible preferences that the particular individual whose freedom is being evaluated may have in the future. It should, rather, be interpreted as the set of preference that *any "reasonable" person* can have. Pattanaik and Xu (45) give the example of appraising the impact of a decision authorizing women to join the army on the freedom of some particular woman, Delima say. They argue that such a decision could plausibly be seen as enlarging the freedom of Delima, even if Delima is a committed pacifist and is absolutely sure that she would in no circumstance choose to join the army. The reason why, according to these authors, allowing women to enrol in the army can be seen as improving Delima's freedom is that it is conceivable that a reasonable person could choose to enrol in the army. The approach obviously leaves aside the politically important question of how are we going to determine when a person, or a preference, is "reasonable".

Yet, provided that we can answer that question, defining freedom in terms of a family of preferences that a reasonable person can have leads one to focus, in appraising the freedom offered by some opportunity set, to those options that could be chosen by some reasonable preference. It is only the availability of those "essential" options - i.e. those options that are optimal from the view point of some reasonable preference - that matters for freedom. Various rankings of opportunity sets based on their subsets of "essential" options have been proposed in the literature. A ranking that has emerged very commonly in this perspective (see Pattanaik and Xu (53) and Romero-Medina (62)) is the ranking of sets according to their number of essential options. If, for instance, it is believed that no reasonable person would ever choose to "be beheaded at dawn", then adding this option to an opportunity set will not be considered as a freedom gain under this criterion. Clearly, for such

a criterion to be significantly different from the comparison of sets on the basis of their number of options, one must have a concept of ‘reasonableness’ of preference that is sufficiently tight. If any logically conceivable preference is *a priori* reasonable, then there is no difference between the opportunity set and its subset of essential option - as any available option would then be essential. On the other hand, if the set of reasonable preferences is defined too narrowly, there is a risk that the notion of freedom will fail in accounting for essential opportunities.

9 Freedom in a social context

The approaches discussed in this entry focus on the definition of *individual freedom* in an abstract context where interactions between individuals are ignored. This leave aside two important issues that are worth a quick mention.

The first one concerns the question of how to allocate more justly the freedoms of the different individuals, after these have been properly defined. There is by now a large literature (see for instance (61) or, for a survey, Fleurbaey and Maniquet (22)) that attempts to make more precise the popular slogan of "equalizing opportunities" as a normatively worthwhile social objective. A large part of this literature addresses the issue of equalizing opportunities not in terms of opportunity sets but, rather, in terms of combining a (freedom-based) respect for the individual's *responsibility* for some of her decision with an (egalitarian) concern for equalizing the aspects of the individual situation for which she can *not* be held responsible. It is of course possible to connect this notion of "responsibility" with that of freedom, as envisaged here, by considering that the individual is not responsible for the opportunity set she is facing but is responsible for the choice she will be making in that set. As a matter of fact, there has been attempt in the literature (see for instance Bossert, Fleurbaey and Van de Gaer (11), Gravel, Laslier and Trannoy ((33), sect. 5), Herrero (36), Herrero, Iturbe and Nieto (37), Kranich ((42), (43)), Ok (48) and Ok and Kranich (49)) to explicitly explore some of the issues raised by the comparisons of *distributions of individual opportunity sets* on the basis of an aggregation of individual rankings of these opportunity sets. In certain cases (see e.g. Bossert, Fleurbaey and Van de Gaer (11) or Ooghe, Schokkaert and Van de Gaer (50)), the connection between the two approaches has been made explicit.

The second issue has been much less explored. It concerns the necessity, for defining freedom, of accounting somehow for the interactions that exist between individuals. Accounting for these interactions is essential for making sense of popular expressions such as "one's freedom starts where other's freedom ends". From a formal point of view, introducing these interactions in the analysis amounts to recognizing the fact that the final consequence of one's choice depends upon the choice of someone else. This requires one to view an individual opportunity set as a set of *actions*, and to view each action as a set of all the *possible consequences* that it can have. The final consequence that obtain as a result of the choice of a particular action will, in

this perspective, depend upon the choice of action made by other individuals. The proper formalism for handling this structure is that of *game forms*, which describe precisely, for each of the concerned individuals, the actions that are available to her as well as the consequence that results for any combination of these actions. This formalism has been used by some authors (see e.g. Deb (18), Deb, Pattanaik et Razzolini (19), Gaertner, Pattanaik et Suzumura (26)), Gardenförs (27) or Peleg (56)) as an alternative to the standard formal approach to *rights* derived from Sen (63) and Gibbard (28). Yet much remains to be done for connecting the notion of individual rights to that of freedom. A recent attempt to defining freedom in the context of game forms can be found in Bervoets (7).

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