

## RATIONALITY AND THE PRINCIPLE OF RATIONALITY IN ECONOMICS \*

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One can approach the notion of rationality in several ways. But in any case, one has to apply one's own type of analysis on human action and behavior.

For this reason it seems to us worthwhile to look at the use which is made of the notion 'rationality' in the theoretical framework of the social sciences : the sciences which study human action and behavior. Economics is a social science. The notion 'rationality' also plays a crucial role in economics.

From a logical point of view, very much is possible in systems where human action, choice and preference are made. When some one has worked for days to build a house, it is not impossible, from a logical point of view, that this person says : 'This is a nice wall, let's pull it down' etc.

Hence, when constructing systems which should serve as models for human action, one prefers to limit the set of possibilities on the basis of the principle of rationality. When constructing a logic of belief, it will be made with regard to man as a rational being. The same goes for a logic of probability, a logic of choice, a logic of preference, etc. and for an economic theory.

What is this principle of rationality ? What does it include ? A good many economists have given a great deal of consideration to it and consequently the principle has had quite a few functions. Schumpeter (1934, pp. 91-92) characterizes the principle of rationality as the adaptation of everyone — of oneself or of others — to one's environment in order to fulfil certain needs to the best of one's ability<sup>1</sup>.

This adaptation may largely take place under social pressure, and needs are also largely formed through the community and through the group one belongs to. Not always does the adaptation take place

immediately after the creation of the need; it may even entail an imperfect result.

Schumpeter's approach to rationality is sometimes criticized as being conservative. This criticism is not valid. In order to act in a community, the condition *sine qua non* is that the actor is adapted to this community, at least to such a degree (a) that the actor is not expelled out of the community and (b) that the acts are efficient in this community. However, this approach does not exclude revolutionary or conservative actions as rational. For even a revolutionary must be adapted to the community to such an extent that he is able to act efficiently in this community.

Schumpeter also distinguishes between conscious and unconscious rationality. A lot of acts which have successfully been accomplished are so to speak mechanized : 'all knowledge and habit once acquired, becomes as firmly rooted in ourselves as a railway embankment in the earth. It does not require to be continually renewed and consciously reproduced but sinks into the strata of the subconsciousness. It is normally transmitted almost without friction by inheritance, teaching, upbringing, pressure of environment' (Schumpeter 1934, p. 83-84).

But this automation, which is important in that it facilitates adaptation, impedes innovation or sometimes hampers an improvement of the adaptation (Schumpeter 1934, pp. 84-86).

According to Schumpeter, conscious rationality is found in the activities of the entrepreneur : 'Conscious rationality enters much more into the carrying out of new plans, which themselves have to be worked out before they can be acted upon, than into the mere running of an established business, which is largely a matter of routine. And the typical entrepreneur is more self-centred than other types because he relies less than they do on tradition and connection and because his characteristic task — theoretically as well as historically — consists precisely in breaking up old, and creating new traditions. Although this applies primarily to his economic action, it also extends to the moral, cultural and social consequences of it' (Schumpeter 1943, pp. 91-92).

The latter remark on the analogous position of the economic, moral, cultural and social consequences illustrates the close relationship that these phenomena bear to man as an active being. As stated above, the principle of rationality may fairly easily be generalized to any activity and consequently, it is probably a general praxeological phenomenon.

Some authors, however, use the term 'rational' in a totally different way. A few quotations by Godelier will illustrate this : 'Le

paysan ivoirien, au state actuel, ne peut être abordé avec les techniques, les structures, les statuts et les modes d'administration qui ont été créés pour le paysannat français, lequel se situe à un autre stade du développement économique et intellectuel, plus proche d'un comportement rationnel...' (R. Dumont).

'Il est apparu qu'on n'avait pas toujours vu entièrement la complexité et la durée des processus du passage de la petite exploitation individuelle à la grande entreprise agricole qu'exige la mise en service rationnelle de la technique moderne ...' (J. Triomphe et P. Noirot)<sup>2</sup>.

It is evident that a farmer who is adapted to his environment in Ivory Coast will fulfil his needs to the best of his ability. The statements of Dumont, Triomphe and Noirot can only be understood if rationality is not made dependent on (a) the subject, i.e. the best abilities of the individual, and (b) the environment in which the individual lives. But in their interpretation of the principle of rationality these authors only consider those actions which the most competent individual in the most favourable environment performs in order to fulfil his needs.

M. Allais and O. Lange have interpreted the principle of rationality in a different way. M. Allais (1955, p. 31) : 'Nous sommes obligés de recourir à la définition qui nous semble se dégager de la logique scientifique suivant laquelle un homme est réputé rationnel lorsque : (a) il poursuit des fins cohérents avec elles-mêmes; (b) il emploie des moyens appropriés aux fins poursuivies'.

O. Lange : (1962, pp. 191-192) 'Le principe constate que le degré maximum de réalisation d'une fin est obtenu en agissant de façon à avoir pour une dépense donnée de moyens, le degré maximum de réalisation de la fin, ou encore de façon à dépenser pour un degré donné de réalisation de la fin un minimum de moyens. La première variante de ce comportement s'appelle le principe du plus grand effet ou encore principe du plus grand rendement. La seconde variante, le principe de la moindre dépense de moyens, ou encore le principe de l'économie des moyens ... Ce sont là deux variantes de comportement équivalentes, conformes au principe de la rationalité économique'<sup>3</sup>.

Allais's and Lange's interpretations could be regarded as different materializations for certain historical contexts of the principle as formulated by Schumpeter.

Questions also arise concerning the statute of the principle according to which man is a rational being.

A. Is this a judgment that is true a priori, i.e. a judgment of which the truth is known independently of experience? Or is it an a posteriori judgment, i.e. a judgment of which the truth can only be

ascertained through experience? If it is true a priori, the question crops up whether it is either an analytic or synthetic judgment. If analytical, the judgment is true on the basis of the significance of its terms (e.g. on the basis of the term 'man') and does not tell us anything at all about reality. If synthetical, it does tell us something about the world<sup>4</sup>.

b. Is this principle of rationality valid for all men of all ages, or only for men of a certain period, at a certain stage of development of society?

In case the latter view is upheld, it should be asked whether this historical relativism is justified. Should the principle of rationality be interpreted or put in concrete terms for any context or for any form of society? <sup>5</sup>.

Does this mean that 'the adaptation in order to fulfil needs to the best of one's ability' — Schumpeter's interpretation of the principle — can be formulated in different terms at different times?

Is, e.g. 'the most successful achievement of an end with given means', which Lange considers as one of the foundations of rational behaviour, a rule that is also valid in primitive societies? Is it also valid for our society which is facing the growing problem of exhaustion of resources, of pollution, etc...?

Or, should one say that what changes and evolves is the end itself and not the interpretation of rational behaviour? Another possibility is that neither the interpretation of rationality nor the end evolves but that the subjects and the environment do. Hence not the principle of rationality but the adapted behaviour is the object of a historical relativism.

According to Godelier, the classical economists posited the principle of rationality as a generally valid principle for all times, hence as an a priori or as an a posteriori general principle. Some Marxists, among whom Lange, believe, however, that the principle is valid since the beginning of capitalism.

Godelier proposes to reject the principle of rationality in the sense stated above since, setting out from this principle, one makes an apology of one's own system. He illustrates how, setting out from the principle of rationality, Smith arrives at an apology of liberalism and how Lange arrives at an apology of socialism (Godelier, 1969, pp. 22-30).

Godelier proposes to make rationality of an individual or of an economic system dependent on truth. An economic action is rational if it is based on true principles<sup>6</sup>. His position is clearly reflected in the following quotations :

"Elle implique que l'on cherche à définir les structures spécifiques de

la production, de la répartition, de la consommation des biens matériels au sein d'une société déterminée, c'est-à-dire le système économique de cette société et ses rapports internes avec les autres structures sociales. Elle impose de chercher les raisons de l'apparition, de l'évolution et de la disparition de ces systèmes dans l'histoire. Ceci signifie que la rationalité économique entrevue dans son double contenu, à la fois rationalité des systèmes économiques et rationalité du comportement des agents économique au sein de ces systèmes, ne se montre qu'à travers la connaissance des lois de fonctionnement et d'évolution de ces systèmes et cette connaissance est le produit de la recherche théorique non seulement des économistes, mais des spécialistes des autres sciences sociales dans la mesure où l'économique est déterminé en partie par le fonctionnement des structures non économiques de la vie sociale" (Godelier, 1969, pp. 31-32).

"Nous avons ainsi démontré que la rationalité économique et la rationalité de la science économique sont une seule et même question et que la connaissance de la rationalité économique dépend entièrement de la vérité des hypothèses élaborées par les économistes (et les autres spécialistes des sciences sociales). Faire apparaître la rationalité des systèmes et des agents économiques c'est donc mesurer la validité scientifique des hypothèses avancées pour expliquer le fonctionnement, la genèse et l'évolution de ces systèmes et de ces comportements."

The question may be raised, however, whether Godelier has not misunderstood the principle of rationality in praxeology. As stated above the principle of rationality is introduced in order to bring the field of human action to dimensions that are susceptible of study. That two opposite theories, e.g. Smith's and Lange's theories, use the principle of rationality is quite normal. If one wants to construct a theory, the field of investigation must be defined. The fact that the same principle occurs in opposite theories may — contrary to Godelier's view — as a consequence not lead to a rejection of this principle.

It is true, however, that a good number of authors have used the principle of rationality as a principle for evaluation which has also been demonstrated by Dumont and Trimpe. Godelier's interpretation of rationality must be understood in that context: it is a proposal to interpret the evaluating aspect which some associate with the concept of rationality. At first sight, one would most appreciate the action and the theory that are based on true principles. But constructing a theory requires the application of the principle of rationality in the very sense that Godelier rejects.

Some problems also arise when positing truth as a principle for evaluating action. For, if efficiency is considered to be important (efficiency in adapting to society and vice versa, also efficiency in achieving one's ends) when evaluating actions and theories, it only seems normal that those actions and theories which are most efficient will be those which are based on true principles. This, in any case, is the standpoint of many authors<sup>8</sup>.

The contrary, however, does not necessarily seem to be true. An action which is based on true principles does not have to be the most efficient one. The problem becomes clearer if alternative actions are possible which are separately based on (different) true principles. From a logical point of view this is not impossible and is in fact quite frequent. In such a case, Godelier's criterion of evaluation, 'truth', in whatever sense, is of little use.

Popper's analysis of the principle of rationality on the contrary seems to be very elucidating (Popper 1967). He postulates that the principle that man acts rationally is an a posteriori judgment which is false in general but which is necessary when constructing a theory.

This principle, very simply, is based on the assumption that man adapts his actions to the situations and the problems as he, himself, experiences them.

As opposed to the principle of rationality which is a theoretically hypothesis, a necessary condition for constructing a theory of human action, Popper posits rationality as an individual attitude, i.e. as a preparedness to judge one's conceptions and ideas as critically as possible and to adapt them after having discussed them with others<sup>9</sup>.

When a theory does not conform with a test, the explanation may be looked for in some or other law or hypothesis of the theory. The principle of rationality may for instance be held responsible but this is highly undesirable for one cannot do without this principle when constructing a theory<sup>10</sup>.

Popper tries to demonstrate the falsehood of the principle of rationality in its general sense by means of an illustration. When observing a hurried, nervous car driver who is desperately trying to park his car, it is clear that all his actions are not adapted to the situation. Since this universal principle proves not to be universally true, it is false. The fact that it is false in some cases proves that it is not an a priori judgment either<sup>11</sup>.

A comparison of Popper's analysis with the one by Schumpeter shows that both interpretations are more or less concurring but that they make a different division. Schumpeter feels it is important to distinguish between conscious and unconscious rationality. Popper prefers to separate 'rationality in thought' from 'rationality in

action. Rationality in thought means the adaptation of ideas on the occasion of a critical discussion with others. Rationality in action, on the other hand, is the adaptation of our actions to problematic situations.

It stands to reason that in a Piagetian approach, rationality in thought will not be separated too rigorously from rationality in action (this in contrast with Popper's view) since thinking is an interior action. Is not the critical adaptation of one's ideas in a discussion with others a specific problematic situation to which we adapt our thinking (our interior actions)?

Our conclusion would be this, the principle of rationality is important in the construction of a theory of human action both as a methodological and comprehensive principle. A methodological principle in the sense that it describes the field of the object at issue, i.e. not all possible human actions but only those which are adaptive, which relate to a certain situation. This specification of adaptiveness, also plays a part in the description of human activities as a hypothesis within the theory, namely as a co-ordination point of different activities.

This principle has been the object of different remarks<sup>12</sup>; it should, e.g., in the form presented here, not be susceptible of falsification and thus be contradictory to Popper's theory of falsifiability. Further from the truth! Popper himself showed that the principle that man adapts his actions to situations and problems as he sees them himself is false in general. A principle of which it can be shown it is false, is definitely falsifiable.

The question also arises how a falsified theory should be adapted. Popper posits that, in any case, the principle should not be changed in any theory of human action but that one had better change other elements of the theory for motives stated above.

This is not contradictory to Popper's theory of science. Checking a scientific theory is one thing, adapting it is quite another thing. It is obvious that a theory may not be adapted such as to obtain no theory, i.e. no systematization; hence, whatever adaptation one makes, this principle should be maintained.

As to the adaptation itself which plays such a crucial role in the principle of rationality in the form stated above, it will be clear that adaptive behaviour may strongly be determined by the situation one finds oneself in. Adaptive behaviour in one culture may in a different culture not be adaptive at all. Hence, the principle of adaptiveness has to be materialized with respect to the time and environment it is applied in. Consequently, the concept of rationality may be the classical principle of rationality in a capitalist culture.

It is to be remarked that the situational constraint in diverse human sciences is more and more emphasized. We have repeatedly pointed out that the necessity to express this situational constraint in formal terms is predominant in economics. The same goes for linguistics, stylistics, etc. This situational constraint is the factor that makes human sciences distinct from natural sciences. The question may be raised whether this situational constraint is not contradictory to Popper's anti-historicism. In logical terms, there is definitely no contradiction, for the problem at issue is adaptive behaviour and its evolution, not the interrelations between the several states of the adaptive behavior.

If, however, we adhere to a structuralism, which postulates that each materialization of the adaptation is determined by the concrete presence of elements with different values, and that a new concrete form of adaptation is independent of the former concrete forms of adaptation, we are definitely adhering to an anti-historicism. We do not mean to say that we adhere to this anti-historicism: we believe that a combination of a genetic-historical and structural method is the most fruitful system. What we want to emphasize is that this principle of rationality is not contradictory to Popper's theory, which might be assumed at first sight.

Some other questions might be raised concerning the principle of rationality in the interpretation mentioned above, such as the inter-relation between the adaptive behaviour at the individual and collective levels. If, e.g., an economic theory sets out from the standpoint that the individual acts adaptively, does this automatically imply that the collectivity will act adaptively? Or should and could special conditions be specified under which the adaptive action of individuals will also be adaptive for the collectivity? The latter possibility seems to be the case.

Obviously, the notions 'adaptive behaviour' and 'needs' — notions which play such a crucial role in the analysis of rationality — need a further specification.

As to 'adaptive behaviour' it will be clear that an enquiry into the use of this notion in biology and genetic psychology (Piaget) would be very useful. As to 'needs', it might be asked whether the substitution of it by the notion 'ends' would not be useful<sup>13</sup>. 'Ends' although functionally related to needs — may perhaps be ascertained and observed in a better way.

Another important question is whether the principle of rationality and the concept introduced above is either normative or descriptive. At the beginning of our analysis, we already pointed to the fact that this concept has very often been used in a normative way. The



concept is in any case also needed for purposes of description. As far as the descriptive use is concerned, we already pointed out that one must be aware that adaptiveness is incomplete. There are exceptions to it. One can consequently argue that adaptive behaviour is normative, i.e. a high degree of adaptivity in the sense stated above should be pursued. It should be clear that here 'rationality' is not used in a scientific but in an ethical context.

We hope this article has contributed to a better understanding of the principle of rationality and of the diverse functions this concept takes up in all kinds of discussions.

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## FOOTNOTES

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<sup>1</sup>The specification 'to the best of one's ability' is quite important here. Does this specification imply that each action is rational? It could be argued that this is the case in a complete determinism for such a system excludes every alternative possibility for the individual. Each action is consequently executed to the best of the individual's abilities. But this does not mean that each action, be it the only possible one, is also adaptive. Thus, even in a complete determinism, Schumpeter's characterization is not trivial.

<sup>2</sup>A farmer who lives in Ivory Coast cannot, at the present stage, be made familiar with the techniques, the structures, the statutes and the ways of administration which have been created by the French farmers who are at an other stage of economic and intellectual development that is closer to rational behaviour. (R. Dumont).

It has appeared that the complexity and the time needed for stepping from the small individual farm to the large agricultural enterprise, which requires the rational implementation of modern techniques, has not always been duly estimated. (J. Triomphe and P. Noirot).

<sup>3</sup>M. Allais: 'We are obliged to have recourse to the definition which scientific logic seems to present and according to which a man can be deemed rational if (a) he pursues ends which are consistent among themselves and (b) if he uses means which are fit for reaching the ends pursued.'

O. Lange: 'The principle ascertains that an end is most successfully achieved through applying a given quantity of means for achieving an end in a most successful way or through applying a minimum of means for reaching a given degree of achievement. The former variant

of this behaviour is called the principle of the greatest effect or the principle of the greatest efficiency. The latter is called the principle of the minimum appliance of means, or the principle of the economy of means... These are two variants of equivalent behaviour which are in conformity with economic rationality.

<sup>4</sup>The fact that synthetical a priori judgments should exist is, amongst others, attacked by the neo-positivists. Some authors, amongst whom Quine, even deny the existence of analytical (a priori) judgments. Further information can be found with Vandamme (1973).

<sup>5</sup>This was a.o. upheld by König J.H. in the paper he presented at the colloqui: 'Vietnam, Wetenschap en Maatschappelijke Verantwoordelijkheid' (Vietnam, Science and Societal Responsibility) (November 1973, Tilburg).

<sup>6</sup>Here action is evaluated on the basis of truth of the principles which are supposed to lie at the basis of the action. In this interpretation, truth, in other words, semantics is dominating. Alternatively, efficiency could be applied as a criterion, which is rather a pragmatcal criterion. In the latter case, action has to be efficient. A third possibility is a moral evaluation.

<sup>7</sup>It implies an attempt to define the specific structures of production, repartition and of consumption of material goods in a given society, i.e. its economic system and its internal relations to the other social structures. It imposes an enquiry into the reasons for the creation, evolution and disappearance of these systems in history. This means that economic rationality conceived in its double meaning, both rationality of economic systems and rationality of the behaviour of economic agents in these systems, can only be perceived through the knowledge of the laws which govern the functioning and the evolution of these systems and this knowledge is the product of theoretical investigation not only by economists but also by specialists in the field of other social sciences in so far as economics is partly determined by the functioning of non-economic structures of social life.

'We have thus shown that economic rationality and rationality in the field of economics are identical and that the knowledge of economic rationality entirely depends on the truth contained in the hypotheses which are worked out by economists (and the other specialists in the field of social sciences). Hence, showing the rationality of systems and of economic agents is measuring the scientific validity of the hypotheses which are advanced to explain the functioning, the creation and the evolution of these systems and of their behaviour. (Godelier, 1969, pp. 31-32).

<sup>8</sup>A discussion of the different interpretations of the concept 'truth'

(coherence, correspondance and pragmatic interpretation of the concept 'truth' with the possible combinations) and its consequences can be found with Vandamme (1973, part III). We shall discuss this problem in further detail in chapter IV. The problem concerning the interpretation of the concept 'truth' shows that Godelier's reference to it does not offer an immediate solution for the problem at issue.

<sup>9</sup>The following excerpt clearly demonstrates Popper's view concerning rationality and the principle of rationality: "Pour résumer : il est nécessaire de distinguer entre la rationalité comme attitude personnelle (dont, normalement, tous les hommes d'esprit sain sont capables) et le principe de rationalité. La rationalité comme attitude personnelle consiste dans la disposition à corriger nos idées. Dans sa forme la plus développée, intellectuellement, c'est une disposition à examiner nos idées dans un esprit critique, et à la réviser à la lumière d'une discussion critique avec autrui. Le "principe de rationalité", de son côté, n'a rien à voir avec l'hypothèse selon laquelle les hommes sont rationnels dans ce sens, et adoptent toujours une attitude rationnelle. Il constitue en réalité un principe minimum (ceci parce qu'il suppose simplement l'adaptation de nos actes à nos situations-problèmes telles que nous les voyons), qui anime presque tous nos modèles situationnels explicatifs et que, bien que nous sachions qu'il n'est vrai, nous considérons avec quelque raison comme une bonne approximation. L'adaptation de ce principe réduit considérablement le caractère arbitraire qui deviendrait une véritable esprit de caprice si nous tentions de construire les modèles en nous passant de lui." (Popper, 1967, pp. 149-150).

<sup>10</sup>"Or si une théorie est soumise à un test, et ne le passe pas, nous avons toujours à choisir celle des diverses parties constituantes de la théorie que nous rendrons responsable de cet échec. Ma thèse est la suivante : une bonne pratique méthodologique consiste à ne pas déclarer responsables le principe de rationalité, mais le reste de la théorie, c'est-à-dire le modèle. De cette manière, il peut encore sembler que, dans notre recherche de théories meilleures, nous traitons le principe de rationalité comme s'il était un principe logique ou métaphysique échappant à la réfutation, infalsifiable ou valide a priori. Mais cette apparence est trompeuse. Comme je l'ai indiqué, il y a de bonnes raisons de penser que le principe de rationalité, même dans ma formulation minimum, est en fait faux — bien qu'il constitue une bonne approximation de la réalité. On ne saurait donc dire que je le traite comme valide a priori.

Je soutiens par contre qu'une bonne politique, une bonne pratique méthodologique, est de renoncer à accuser le principe de rationalité de l'échec subi par notre théorie : nous aurons davantage à apprendre

si nous examinons au contraire notre modèle situationnel. Le principal argument en faveur de cette politique est que notre modèle est beaucoup plus intéressant et riche en informations, et qu'il est beaucoup plus facile à tester, que le principe de l'adaptation de nos actions. Nous apprenons fort peu de chose si nous constatons que le principe n'est pas strictement vrai : nous le savions déjà. En outre, bien qu'étant faux, il est en général suffisamment proche de la réalité; la conséquence est la suivante : si nous pouvons réfuter empiriquement notre théorie, le résultat négatif du test sera en général assez tranché, et bien que le principe de rationalité puisse en être une des causes parmi d'autres, la responsabilité principale va échoir normalement au modèle. Un troisième argument est que toute tentative de remplacer le principe de rationalité par un autre semble conduire à un total arbitraire dans la construction de nos modèles. Et enfin, il ne faut pas perdre de vue que nous ne pouvons tester une théorie autrement qu'en bloc, et que le test consiste à trouver la meilleure de deux théories qui peuvent avoir beaucoup d'éléments communs; or la plupart des théories ont en commun le principe d'adaptation des actions" (Popper 1967, pp. 146-147).

<sup>11</sup> He demonstrates the falsehood of the principle of rationality as follows : "En effet, le principe de rationalité me semble certainement faux, même dans sa formulation la plus large, celle adoptée ici, qui peut s'énoncer de la manière suivante : 'Les individus agissent toujours d'une manière adaptée à la situation où il se trouvent'. Je pense qu'on peut voir très facilement pourquoi. Il suffit d'observer un automobiliste énervé, qui essaye désespérément de stationner lorsqu'il n'y a aucun emplacement libre, si nous voulons nous assurer que nous n'agissons pas constamment en accord avec le principe de rationalité. En outre, il existe des différences personnelles, visiblement importantes, non seulement dans les connaissances et les aptitudes — celles-ci font partie de la situation donnée — mais dans l'évaluation ou la compréhension d'une situation donnée, et ceci signifie que certaines personnes vont agir de façon adaptée, et d'autres non. Mais un principe qui n'est pas universellement vrai est faux. Par conséquent, le principe de rationalité est faux. Il me semble qu'il n'y a aucun moyen d'échapper à cette conclusion. Ainsi, nous devons constater qu'il n'est pas valide a priori" (Popper 1967 pp. 145-146).

<sup>12</sup> We should like to quote some remarks made on this subject in the working group 'Rationaliteit' ('Rationality') (R.U.G., 1974). In this connexion we wish to express our thanks to K. Boullart, D. Batens, E. Vermeersch, M. Van den Enden and F. Verbruggen for the heuristically interesting discussions.

<sup>13</sup> This is a suggestion by E. Vermeersch.

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