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Article — Digitized Version

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Intereconomics

Suggested Citation: Bodenstedt, Andreas (1969) : New patterns in introducing innovations, Intereconomics, ISSN 0020-5346, Verlag Weltarchiv, Hamburg, Vol. 04, Iss. 9, pp. 284-288, <https://doi.org/10.1007/BF02926270>

This Version is available at:

<https://hdl.handle.net/10419/138254>

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New Patterns in Introducing Innovations

by Dr Andreas Bodenstedt, Heidelberg *

The promotion of development in the so-called traditional agrarian societies emerges as one of the most important and difficult problems for the development agencies. The analyses of the current experiences seem to indicate two essential phenomena:

□ Similar measures of development aid in different regions may often lead to results that are quite uncomparable. This would be explained by short term changes in factors affecting agricultural production or as an effect of structural differences.

□ The complementary phenomenon is somewhat more difficult to explain: that alternative types of approach to development might lead to similar degrees of success in different areas. To my knowledge there is no general typology of development measures which could be applied to make a comparative study of this.

A research project which was assigned by the Federal Ministry of Economic Cooperation to the Heidelberg-based "Research Centre for Agrarian Structure and Rural Cooperatives in Developing Countries" was meant to contribute towards solving this problem. In order to achieve this objective we deviated from a purely economic method of evaluation and applied the following operational definition to our task:

Development aid will be regarded as a complex of prescribed approaches—and the individual variants thereof—of so-called development agents.

* Abridged version of a lecture made at the Annual Conference of the "Research Centre for Agrarian Structure and Rural Cooperatives in Developing Countries" in Heidelberg, Dir. Prof. Dr. O. Schiller. The full text of all speeches and discussions of the conference on June 27th, 1969, in Heidelberg will probably be published in 1970. For spare copies of single lectures apply to the above-mentioned Research Centre.

These approaches are patterns of social action which are directed towards changing those patterns of behaviour of a social unit among the population of the developing region, which are relevant for agricultural production. The resulting patterns should be apt to fulfill the goal of the development project.

Motivated Behaviour

The quantity and diversity of possible and probable variables which might account for what we call "progress" or "failure" of development measures is embarrassing. A generally accepted method of analysis is to disentangle certain factor combinations or factor correlations and to test them by means of mathematical or "trial and error" procedures. It is true that it seems to be impossible to include all the factors into such an analysis. But we merely ignore the fact that there is really an institution performing this impossible task every day; this is the motivating system of everybody which guides and determines his actions in daily life.

It may not be necessary to give a lengthy explanation and definition of what we term as motivated behaviour¹. I would only like to answer a major point of valid objection which is likely to be raised. This point is that whatever determines and guides one's behaviour, certainly it is a purely individual variable and inaccessible to any "alter ego". This objection can be refuted from observations of every day life; that everybody acts

¹ The most important details of this theoretical approach can be found in: Alfred Schütz, *Collected Papers*, Vol. I-III (sociologist), and George Kelley, *Man's constructions of his alternatives*. In: Lindsey, G. (ed.), *Assessment of human motives*, New York, 1958 (psychologist).

in a way as if he "understood" the other persons' ideas and motives. The reason is that the fundamental stock for such interpretation consists of socially transmitted, socially distributed and socially recognised typical constructions. The group to which a person refers in using his interpretational constructs and which may vary from individual to individual and from one moment to another strictly limits the possibility of using and understanding these typified elements of interaction within the borders of its own system. Focussing on this point the sociologist might win some credibility for his comments and analyses of this esoteric phenomenon called "social".

Study of Mutual Relations

Therefore, it seems plausible to study the mutual relations between dates of the every day "life world", measures of development aid, and rural patterns of behaviour by means of a functional "empty model" of the typical motivational structure of a farmer in, say, Nyeri district in Kenya or Sambalpur district in Eastern India. This does not only mean a study of the regional distribution of natural and other resources, as suggested by Belshaw² but "the total rural institutional context" and how it is perceived in typical constructs by the farmers of the region.

We have constructed such a model, tested its viability by mathematical and trial and error methods and arrived at the following hypotheses:

☐ The degree of success of a certain development approach can and very often must be measured by the degree of innovativeness of the farmers, that is, their readiness to adopt innovations.

☐ Realised and proven innovativeness and its contrary, rejection, is a form of motivated action, but not merely a reflexive or tradition-bound behaviour.

² In: Agricultural Planning in East Africa, pp. 60, 62, 64.

☐ The motivation of this action is determined by a typical constellation of experiences in the farmer's reasoning.

☐ The personal constructs by means of which the individual grasps the events and facts of his "life-world" are mutually related with certain personal qualities (e.g. literacy, descent).

☐ These contingencies lead the individual to different ways of cognition, want and valuing and finally to typical motivational tendencies. The motivational tendencies, then, determine whether an innovation will be recognised, tested, adopted, or rejected.

Verification of Hypotheses

The existing data from our field research—that is intensive interviews with 300 Indian and (not yet processed) 550 Kenyan farmers—suggest a verification of these hypotheses. Our main argument is: the basic differentiation of typical motivations of economically relevant actions is regional. This is to conclude that the farmers of developing regions with the same or similar typical features must have similar motivational tendencies.

Within a region it is the socio-economic status of the farmers, respectively their families which acts as a factor differentiating the motivation. Planning or ex post evaluation studies must take into account this stratification and try to cover it with suitable categories. We used three such categories, i.e.

☐ sufficiently and better provisioned families,

☐ families with a fluctuating and barely sufficient level of self-provisioning,

☐ families which are regularly insufficiently provided.

But a somewhat broader or more refined classification is also possible.

Socio-cultural categories subdivide the second level of stratification, but are subordinated



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to the socio-economic criteria to a much higher degree than we expected. Rarely such variables as are level of education or caste memberships proved to be factors that determine similar motivations across regional and socio-economic border lines.

Conditions of Location

These are the typical configurations of general economic and natural conditions of locations by means of which we developed the model of "regional differentiation":

☐ Location with unused development potential, whose characteristic factors (which need not appear all at the same time, but occur frequently) are: overpopulation, mainly small and diminutive farm size structure, indebtedness of small and medium-sized farms, absence of market centres with strong pressure of demand, great dependence of agriculture upon climate, rainfall and natural catastrophes damaging the crop, strict class pattern with little social mobility, few communication channels and centres on the supra-village level, no insight into or experience with modern technological changes.

☐ Location with larger but incompletely used development potential, with the following characteristic factors: Less frequent occurrence of factors mentioned before (possibly no population pressure), particularly: less strict class pattern with ascriptive characteristics, regional urban centres of industrialisation within reach of agricultural hinterland, and in connection with this, larger and more widely distributed outlets and centres of demand. The decisive result of such a combination of factors is that technological change appears and can be perceived in the "environment", the farmers' sphere of experience, without any pressure for participation.

☐ Location with greater and mainly activated development potential, showing these characteristic factors: Little population pressure, largely medium-sized farm structure; road and railway network, urban centres of demand and mass media developed; facilities for protection against natural catastrophes (canals, dikes), governmental or co-operative organisation for raising credits and supplying farm equipment, high permeability of social classes, homogeneous or balanced cultural group pattern.

Typical Motivation Factors ...

In each of these three typical locational configurations, certain conceptual patterns dominate the motivation process of the farmers and thus produce different approaches to the innovations offered:

☐ In the first location the dominant conceptual pattern is the every day upkeep of the family.

☐ In the second location this subsistence attitude is superseded (but not yet suppressed, corre-

sponding to the ambivalent development situation) by an attitude governed by considerations of efficiency, profit and competition.

☐ In the third location the subsistence attitude is insignificant. Efficiency considerations are largely dependent on the availability of knowledge of farm management and market economy.

... and Criteria of Stratification

The decisive stratification criteria of the rural society are derived from this mechanism which determines motivations.

In the primarily subsistence-oriented society, the relevant class criterion is the degree of self-support of the family by its own production. In the rice cultivating monsoon agriculture of South Asia this degree can easily be measured by the time the family can live on its own rice. This results in the classification of families with a rice supply, from their own production, of

- ☐ less than four months (a)
- ☐ four to six months (b)
- ☐ seven to nine months (c)
- ☐ more than nine months (d)

For the sake of convenience, the first two groups should be lumped together.

Secondly, we deal with the rural society which lives under the conditions of visible technological change. Here the same classification into degrees of self-support is basically applicable. An additional differentiating factor is the spatial and personal proximity to the newly developing urban-industrial centres. Production can be, and is, complemented by money incomes coming primarily (industrial work) or secondarily (bazar trade, vegetable-growing) from industrialisation, so that the stratification develops along these lines:

☐ Families with still insufficient total income, consisting of self-grown rice for 6 months and supplementary incomes from traditional work (type a₁), bazar trade (type a₂) or industrial work (type a₃).

☐ Families with barely sufficient total income, from self-grown rice for 6-9 months and supplementary incomes from bazar trade or vegetable-growing (type b).

☐ Families with good total income, from self-grown rice for 6-9 months and supplementary incomes from industry (type c).

☐ Families with self-grown rice for 9 months without any relevant supplementary incomes (type d).

The percentage of these types of family farms in the population is dependent on the access to the sources of money incomes depending primarily or secondarily on industry (primarily = wages earned at missionary stations, in the services cash

Incomes from own market activity), as shown in Table 1.

Table 1
Spatial distribution of types in 2. location

accessibility	types of similarly motivated groups of farmers			
	a ₁	a ₂	b	c
Direct proximity of regional industrial centres				
Easy access to sources of money income primarily dependent on industry	a ₂	a ₃	b	c
Easy access to sources of money income secondarily dependent on industry	a ₁	a ₂	a ₃	b
Difficult access to sources	a ₁		b	d
No access to sources	a ₁			d

Turning now to the conditions of a region with a developing economy we find that the self-support attitude loses its significance for most farmers. Competition or efficiency attitudes and the faculty to apply knowledge of farm management in a profitable way create a third group of relevant class criteria, which is, the level of education and training:

- Farm operators without school education (a)
- Farm operators with general education (b)
- Farm operators with special agricultural training (c)

Typical forms of the Innovativeness

The comparison of the criteria developed above with the empirically stated reactions of the farmers to the offer of innovations results in Table 2.

Table 2
Relation between type of motivation and innovativeness

Degree of innovativeness	Motivational types occurring in		
	1. location	2. location	3. location
Low, since self-support seems impossible to achieve, or not sufficient knowledge	a b	a ₁ a ₂ a ₃	a
Low, since increase in production seems unnecessary	d	d	
Partly willing to invest and adopt		b	b
High, because of state of demand, competition or know-how	c	c d	c

This might be explained by some additional comments on the typical way of the farmers' reasoning. If in the case of the first location the expected production cannot fulfill the wants of the family, those wants are fixed on the lowest possible level. In other families, where the satisfaction of the family needs according to their experiences will be assured in every season, traditional wants would not go beyond these limits, but can be superseded by new wants arising from outside contact. The group of farming families in between those two cases is apt to fall into the lower category in a bad year (consuming abstinence

becoming necessary) and into the higher category in a good year (new wants possible).

In the first group again the means and resources are so scarce that the farmer generally sees no possibility to exploit them more profitably; thus casual labour must contribute to the family revenues in order to guarantee its subsistence. In the well-provisioned family labour is not the most important factor but capital. The middle category will resort to labour first and try to collect a little capital in order to realise the chance of crossing the borderline into regular self-support.

Finally, the risks of agricultural activities are less important in the group beneath the limit, but the "social risks", e.g. the duty to take care of old and sick family members or to repay previous debts, may exert a paralysing influence on the motivating process. The well-to-do farmers do not have to care for the risks, but the medium category will attribute the highest importance to these risks.

Consequently, for stimulating the readiness for adoption, the heads of families with assured subsistence need incentives in form of new wants which have to be created in order to stimulate their interest in profit making, they also need capital for investments. The middle category needs protection against losses by means of assured prices and marketing facilities in order to be sure to make any profit. The low subsistence category needs first of all the possibility of raising the land/man ratio by means of migration to non-agricultural professions, so that subsistence beyond the imposed ceiling of wants becomes probable, and profit making becomes meaningful for these families.

Similarly we might argue in the case of the second and the third typical location. The hypothetical assumptions found ample proof in empirical research. From January to June 1967 a team of two agriculturists and one sociologist conducted a field survey in three Indian "Intensive Agricultural District Programmes" in order to collect basic materials for a comparative evaluation of different development methods in the framework of so-called extension projects. The study covered the districts of Sambalpur in Orissa, Ludhiana in Panjab and Mandi in Himachal Pradesh³.

Despite a high level of illiteracy there is a high regard for and a rational use of the education facilities to be found. Those having the technical and farm management know-how organise their farms according to rational factor-combinations.

³ A final report was submitted to the German Ministry of Technical Cooperation (Typische Verfahrensweisen in landwirtschaftlichen Beratungs-Projekten und ihre Wirkung auf die Adoptionsbereitschaft der Bauern). A summary in English is available from the above mentioned "Research Center", Heidelberg, Kurfürsten-Anlage 59. See further: K. H. Jungmans: Das landwirtschaftliche Hinterland Rourkela. In: Indo Asia, H. 1, 1968, pp. 33-49. W. N i e l ä n d e r: Regionale Industrialisierung und landwirtschaftliche Märkte — das Beispiel von Rourkela. In: Zs. f. Ausl. Landwirtschaft, Jg. 8, H. 1, Jan. 1969, pp. 39-60.

This is exactly the same general setting as described by J. Morris for East Africa: "The demand for agricultural training does not emerge until farming has, in the area concerned, reached a fairly advanced stage ... Agricultural education cannot serve as the prime mover for changing such a situation" (i.e. a fairly undeveloped one) ... "the most developed parts of a country are the first to reach this stage".⁴

Evaluation of Package Programmes

The awareness of the advantages of the so-called package projects ("Verbundprojekte") is gaining momentum. The Indian "LADP" represent so far the oldest, most thoroughly executed, and geographically the most widely distributed example of this type of approach.

According to our findings from the sociological, as well as from farm management, studies, the combined offer of several "innovations" (i.e. ideas, organisational measures, techniques, and means of production) is the most appropriate way of introducing these improvements into the established patterns of agricultural production in developing regions. The reasons are:

☐ As was explained above, the motivational structure of the so-called traditional farmers is complex. The introduction of one single innovation, if not supported by "flanking measures" often seems to meet with considerable resistance.

☐ The farmers' reasoning takes account of possible risks, side effects, and emergence of new needs. An integrated approach can help to overcome many of these objections because suitable measures are already pre-supposed.

☐ From the purely agro-economic point of view single or unrelated changes might involve more inputs or unpredicted quantities of output. Such consequences are liable to destroy, what the farmer regards as a traditionally balanced system of family needs and efforts in agriculture. A rationally calculated combination of factors on the level of a new pattern of inputs might prove to the farmers, after a one or two years' experience, that the balance of their farm economics is maintained or even improved.

☐ It is the multiplicity of innovations, which initially appear as being complicated and thus a handicap for an agricultural project but finally makes it possible what we found to be the most important fact in development planning: the offer of appropriate alternative sets of measures for improvements which appeal to differently motivated groups of farmers. A combination of regionally differentiated programmes as practised in Mandi and socio-economically differentiated programmes as practised in Sambalpur appears to warrant optimal benefits but requires intensive planning.

A general conclusion from this is that preliminary (feasibility) studies must make use of survey techniques even at a considerable cost of time (1/2 to 1 year). Furthermore, it is evident from our study that the package programme staff, especially its leader, should be carefully integrated into the existing administrative body. The disadvantage of being subject to bureaucratic procedures and their typical ineffectiveness can be offset by giving the project leader a rather powerful position in the administration.

Within the framework of package projects ("Verbundprojekte") some types of agricultural development efforts which seemed to meet with little success when singly applied can be re-established and thus contribute to the benefit of the whole (i.e. demonstration farms, farmers' training centres). A comparative view of package projects should determine and evaluate the existence of the following typical measures:

☐ Measures of preparation and supply of production means and knowledge, that is, research, multiplication of seed, transport of fertiliser, instruction of advisors and field workers etc.

☐ Measures of communications: that is, information of the farmers about the innovations, demonstration of their effects, persuasion if necessary privately or in groups, personally or by means of mass media etc.

☐ Measures of guarantee: that is, all organisation, improvements, contracts, administrative procedures that are geared to guarantee the farmer a profitable sale of his products.

☐ Measures of organisation: that is, the way in which the various components of the project, its personnel and the project itself are integrated and coordinated according to functional needs and relations.

Planned and Unplanned Packages

Besides offering "packages" of innovations within the framework of an integrated development project we found ample proof for similar results from the impact of "unplanned" package offers, as from the intended and unintended effects of a regional industrialisation programme. The construction and running of Rourkela steel mill produced new labour and market opportunities and a set of material incentives which induced many farmers in the agrarian hinterland to adopt more than one innovation and to improve the level of agricultural production considerably.

Both types of package projects require more planning than single-measure projects and must run for some time to show positive results, which mostly cannot be measured in economic terms only but in terms of understanding and approval for change by the farmers themselves.

⁴ In: Agricultural Planning in East Africa, p. 332.