

# **FROM THE GROUP TO THE INDIVIDUAL**

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# Introduction

We consider here the opposition between society and the individual which raises crucial issues in the social sciences.

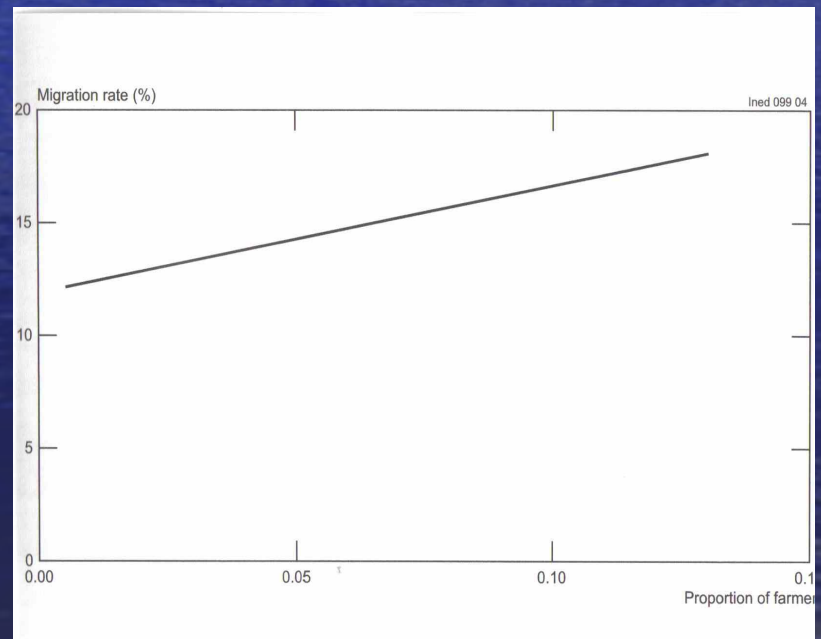
Should social movements be viewed as the consequence of social facts generated by supra-individuals, or on the contrary as aggregates of the actions of the individuals?

# From the group level...

- Period analysis of social groups

Example: Migration in Norway

Using classical linear-regression methods we can estimate the parameters of a relationship between the regional migration rates and the proportion of farmers



# An underlying paradigm:

Social facts exist independently of the persons who experience them. They are explained by various economic, political, social, and other characteristics of society: this defines a form of causality originating in society itself and not in the individual, a causality whose effects are felt on an entire population.

This approach is a form of holism, in that it explains the evolution of a society in terms of its overall goals, without bringing the individual will into play.

# Methodological issues:

Synthetic indices that are hard to interpret: they don't correspond to the probabilities of the event.

Regressions that are hard to interpret: some correlations exist between characteristics.

The ecological fallacy: aggregate data cannot be used to study individual behaviors.

## •Introduction of seniority in the group

Try to isolate demographic phenomena in their pure state, so as to rid them of the effect of disturbing phenomena and allow comparisons between countries or periods.

Work on generations or cohorts and track them through their lives from birth or from an other event linked to the studied event.

The probabilities to know an event are identical for all members of the population, **homogeneity**, and there is **independence** between the studied event and the others, called disturbing events.

# Paradigm of the cohort approach

The demographer can study the occurrence of only a single event, during the life of a generation or a cohort, in a population that preserves all its characteristics and the same characteristics for as long as the phenomenon manifests itself.

This approach is also a form of holism, albeit different from the holism that informs period analysis: it denies the existence of individual entities, in order to confine itself to comparisons between homogeneous groups, observed during their entire life.

# Methodological issues

Independence must be ensured: this hypothesis is fairly implausible for many demographic events.

It precludes the study of exits due to competing events, interacting events and of events in a population with entry and exit flows.

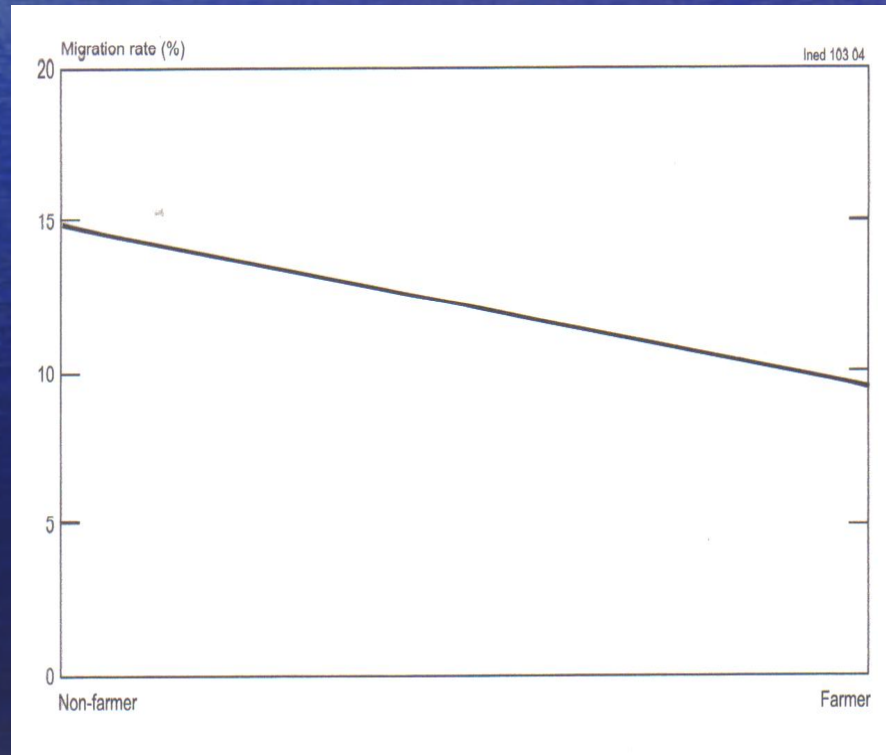
Homogeneity of the population must be ensured: if we define more restricted groups this will require such detailed breakdowns of the population as to invalidate any serious calculation.

# ... to individual level

- Analyzing individual data

Introducing individual behaviour:

We can estimate the probability that an individual with the characteristics will experience the event



# Introducing time regressions

We have to define a random variable  $T$  corresponding to the time elapsed between the initial observation instant and the occurrence of the event.

The survivor function is defined as the probability of  $T$  being at least as great as a given value of the time.

The hazard function specifies the instantaneous rate of failure at  $T=t$  conditional upon survival to time  $t$ .

We can analyse with a proportional hazard model the effects of different characteristics on this hazard function.

We can also analyse the interaction between phenomena.

# Paradigm of event history approach

- Individuals follow complex life-long trajectories that depend, at a given instant, on earlier trajectories and on the information that they have acquired in the past.

This resolutely individual approach reflects a methodological individualism and shows that people's behavior is connected to their prior life histories, without seeking the motives for their acts in society.

It describes an individual life as a stochastic process, unfolding in a given generation or cohort.

# Methodological issues

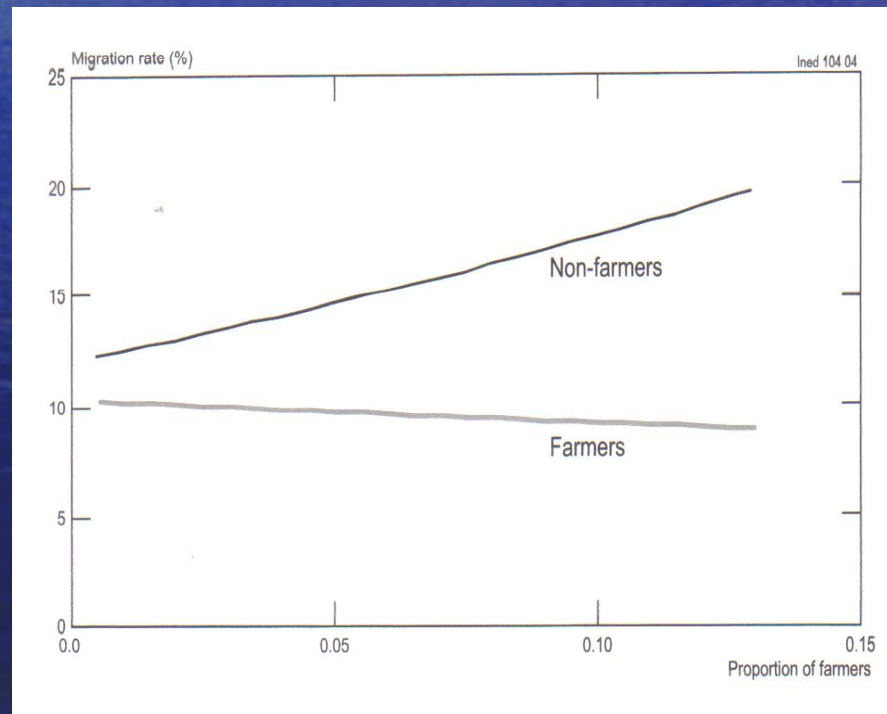
Unobserved heterogeneity: while there is only one model without unobserved heterogeneity, there exists an infinity of models with unobserved heterogeneity and estimated hazard functions that differ but adjust identically to the observed data.

Risk of atomistic fallacy, for overlooking the context in which human behavior occurs

# Towards a contextual and multilevel analysis

## From contextual analysis ...

We need to bring data measured at the individual and aggregate level into play simultaneously to explain a behaviour that remains individual



# Advantages of contextual analysis

This analysis permits to use data measured at different aggregation levels to explain an individual behaviour.

We can now grasp the difference between this approach, which uses aggregate characteristics to explain an individual behavior, and the aggregate approach which explained an aggregate behavior by equally aggregate characteristics.

We can then eliminate the risk of ecological fallacy, as the aggregate characteristic will measure a different construct from its equivalent at the individual level, and the risk of atomistic fallacy, as we take into consideration the context in which the individual lives.

# Inconvenients of contextual analysis

The model assumes that the behaviors of individuals within a group are independent of one another.

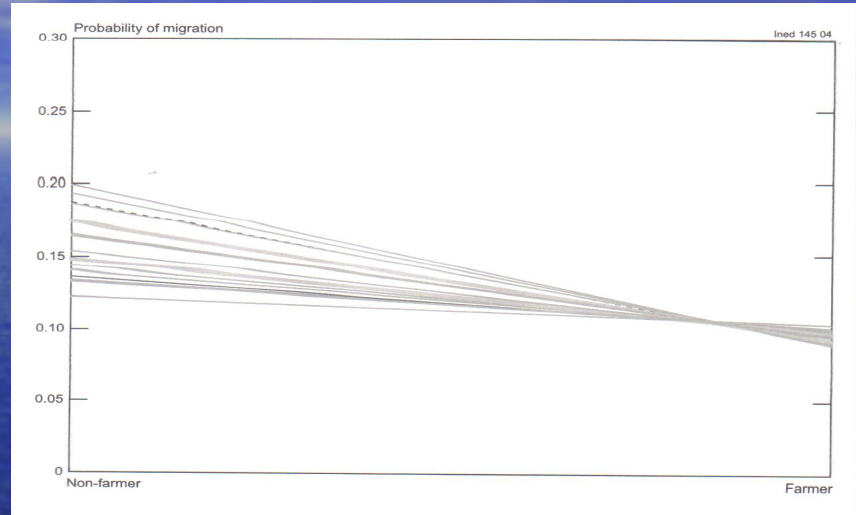
In practice, the risk incurred by a member of a given group more likely depends on the risks encountered by the group's other members.

Overlooking this intra-group dependence generally biases the estimates of contextual effects, generating excessively narrow confidence intervals.

# ... to a multilevel analysis

The differences between contextual and regional models are given here.

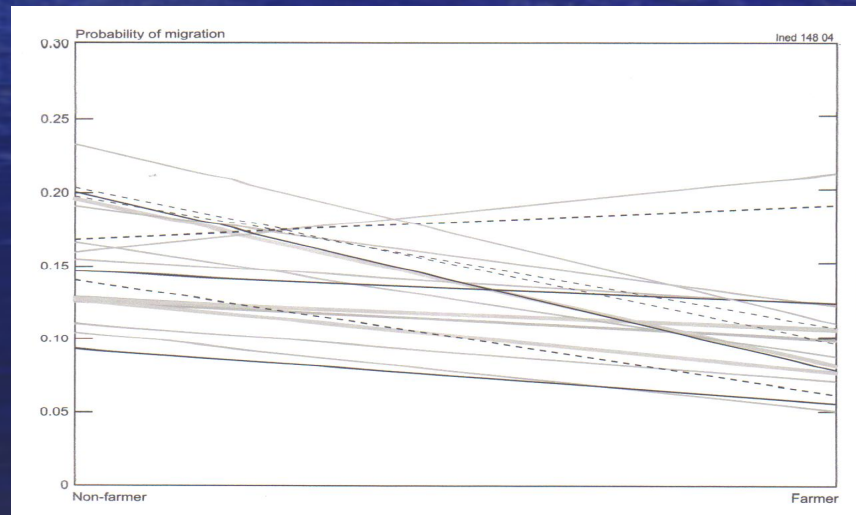
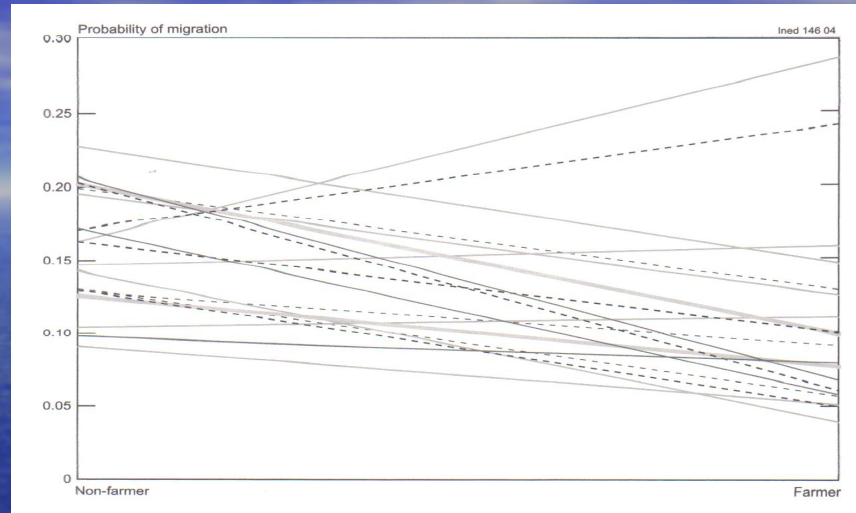
However the regional models give results too unstable and could no longer reveal significant relationships. The analysis was drowned in random fluctuations



# A multilevel compromise

It seems useful to seek a compromise between a model that places no constraints on its estimators but virtually precludes a significant estimation and a model with excessively strong constraints whose validity we can hardly test.

Introducing random terms we can restrict our analysis to variances and covariances between these random variables. This leads to a multilevel model.



# Advantages of multilevel analysis

These methods permit hierarchical classifications, cross-classifications, and more complex multiple membership models.

They permit to introduce random terms at each level of aggregation and to estimate their variances and covariances.

They lead to linear analysis of continuous characteristics, to analysis of discrete characteristics and finally to multilevel event history analysis.

This last kind of models may be semiparametric Cox models, accelerated failure time, discrete time models ...

# Towards a more complete paradigm

An individual behavior is dependent on his or her past history, viewed in its full complexity, but it will be necessary to add that this behavior can also depend on external constraints on the individual, whether he or she is aware of them or not.

The contact circle, people's environment and the information on the world they receive from the press and television can play a role in their behavior.

Pressure from surrounding society can influence people's behaviour without their being fully conscious of it. Conversely we have to see the perverse effect of individual actions whose initial aim was totally different from the result obtained.

# General conclusion

The aggregate-level objects are not the sum or the mean of the lower-level objects, for the aggregate level's organization into a whole endows it with new properties. At the same time, we need to study the effect in the opposite direction of the aggregate level on the lower level units that compose it.

By making it possible to examine simultaneously the multiple significance of a human fact, in a model that incorporates an active temporality, the multilevel approach should bring us closer of the objectivation of human experience and, more generally, towards a new form and a fuller theory in social science.

For more detailed information on this topic you can visit my personal website:

● **[www.courgeau.com](http://www.courgeau.com)**

or read the following volumes I published:

**Methodology and epistemology of  
multilevel analysis, Kluwer, 2003**

**Multilevel synthesis, Springer, 2007**