

GENERALIZATION

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ABSTRACT. Psychological generalization is a pervasive phenomenon. This note outlines some aspects of generalization that are of particular relevance for institutional analysis. Learning, motivation, and co-ordination depend on generalization. Closer attention to phenomena of generalization may enhance our understanding of the economic performance of firms and countries and may contribute to our understanding of social evolution.

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INTRODUCTION

First we may observe, that the supposition, that the future resembles the past, is not founded on arguments of any kind, but is derived entirely from habit, by which we are determined to expect for the future the same train of objects, to which we have been accustomed.

David HUME, *A Treatise of Human Nature*

Psychological generalization is a fundamental process underlying learning, motivation, and interaction. The term refers to forming general notions or propositions from the observation and comparison of individual facts or appearances, and applying them to similar or analogous cases.

This note outlines some aspects of generalization that seem of particular relevance to institutional analysis. Sections 1 to 5 discuss briefly how learning, coordination, and work attitudes depend on generalization, Sections 6 to 7 relate the productivity of firms and countries to phenomena of generalization, and Section 8 explains that generalization may give rise to discontinuities in social evolution.

1 GENERALIZATION AND LEARNING

We learn from experience. This is commonplace, but we can be more specific: We learn by perceiving patterns and extrapolating these to other cases. In this sense, learning rests on generalization: Learning works by generalizing perceived regularities.

This feature of learning – the extrapolation of perceived regularities – is of particular importance regarding the learning and formation of the rules governing social interaction. If we arrive on a Monday at a foreign country and see that the traffic keeps right on Harbour Street and Broadway, we will guess that traffic keeps right on all streets in that country – everyday, not only on Mondays. This expectation may be wrong, but we try such simple hypotheses first. It is only if they fail that we look for refinements and notice exceptions. In so far as many individuals generalize in a similar they, they will all draw the same conclusion – to keep right everywhere – and this will establish a rule of social interaction.

Yet generalization works even more sweepingly. If we conclude to keep right on the street, we will tend to keep right on sidewalks and staircases as well. To state this formally, consider the table of alternatives:

	on road	on sidewalk
keep right	a	b
keep left	α	β

Generalization would favor combinations (a, b) and (α, β) – to keep on the same side on roads and sidewalks – and impede mixed combinations such as (a, β) and (α, b) .

Further, we learn sometimes by noting deviations from generalizations. In these cases, learning presupposes generalization as well. If we grasp that the plural of a noun is formed by adding an “s”, we have generalized a perceived pattern. Later on we may learn that the plural of “opus” is “opera” because it derives from Latin, and we have to memorize this, along with “genera,” as a refinement. If we attend a tennis match and see that the server scores first 15 and then 30, we may expect that his next score will be 45; yet we will learn that he scores 40, and we will continue to wonder why this might be the case.¹ Yet even here we learn by generalizing: We learn 15, 30 and remember 40 as an exception replacing 45. Noting the exception presupposes noting the underlying regularity to begin with, and this involves generalization.

2 GENERALIZATION AND COORDINATION

Consider this: A workman is ordered on Monday afternoon to move from department Y , where he would be idle, to help in department X .² He will generalize this command and will assume that, if idle, he ought to help on Tuesday afternoon as well. The foreman is well advised to agree. Giving another order on Tuesday afternoon, under the same circumstances as those that were prevailing on Monday afternoon, will undermine his competence, as perceived by the worker, and will thereby undermine his authority. If he wants to have it differently on Tuesday, he better give a good reason.

The case is quite similar to the former case about keeping right or left on streets and sidewalks. Formally we may write

	on Monday	on Tuesday
Help in department X	a	b
Do not help in department X	α	β

Generalization favors again combinations (a, b) and (α, β) and works against combinations (a, β) and (α, b) .

Such generalization is often of great advantage. As remarked already, there is no learning without generalization. In a less philosophical vein, generalization saves transaction costs because commands need not be issued over and over again, and similar cases are treated similarly without explicit order or intervention.

¹As remarked in the Encyclopedia Britannica (2002): “It never has been satisfactorily explained why three points equal 40 rather than 45.”

²This paraphrases the famous example by (COASE, 1937, 35). See also SCHLICHT (2005).

Yet generalization can pose a formidable impediment to change and useful adaptation. In the table above, a implies b by generalization, just as b implies a in reverse. It is therefore difficult to sustain combinations (a, β) or (α, b) even if one of them is strictly preferable over both (a, b) and (α, β) from some instrumental point of view.

Assume for instance that we start with (a, b) – the workman helps on Mondays and Tuesdays. Some changes occur, and the combination (a, β) turns out to be more productive. It is preferable that the workman helps on Mondays but not on Tuesdays – maybe because on Tuesdays some new processes are used in department X , and the workman is too clumsy to help. (If you explain this him, he would be insulted; if you don't explain, he would be offended.) Further, barring him to help on Tuesdays – with or without explanation – will weaken his obligation to help on Mondays. In addition, the entitlement of department X to obtain help from department Y would be weakened, and this may induce department Y to accept help on Tuesday even if not needed, for reason to uphold this entitlement. In this way, enforcing β may eventually bring about the combination (α, β) which may be worse than the initial combination a, b . Generalization eases some combinations $(a, b$ and $\alpha, \beta)$ and impedes some others $(a, \beta$ and $\alpha, b)$, quite independently of technological efficiency. Generalization channels interaction.

It is sometimes emphasized that the interaction in firms is governed by routines (NELSON and WINTER, 1982, Ch. 5). This view would be quite incomplete and even misleading without taking into account that routines are governed by generalization. Routines are almost never reducible to blind and stupid repetition, they are neither hard wired nor imprinted, they don't turn workmen into automata. Tacit knowledge is shaped by practice and deteriorates without practice. The routines governing the salesperson's interaction with customers are incessantly adjusted to the problems at hand, and modified according to circumstance. Likewise, the routines adopted by the foreman for allocating jobs among the workmen, and the workman's way of handling orders are responsive to circumstance. Similar cases are treated similarly, and different cases are treated differently according to the way the differences are handled. In this way the diverse routines are tied together by generalization, very much like right-hand driving is yoked with keeping right on the sidewalk.

3 FAIRNESS AND GENERALIZATION

The prime importance of fairness judgements for economic interaction is, by now, acknowledged.³ Attention is drawn to "fairness fights" where people claim, in the name of fairness, what serves their own narrow interests. This gives rise to the

³This and the following relies on ZAJAC (1995).

cynical view that judgements about fairness are arbitrary and self-serving. If this were true, reasonable people would not accept fairness arguments, yet fairness arguments reign public debate. Successful politicians seem to think that fairness arguments are powerful political weapons, and they are successful. This seems to suggest either that people are stupid and can be cheated all the time, or that the cynical view is wrong – that people are actually influenced in their actions by considerations of fairness. Fairness matters in both cases.

In order to appreciate the importance of fairness judgements for economic and social interaction, it seems even more important, though, to consider the many cases that are settled without any fight. This goes often unnoticed, yet such cases are arguably more important for social and economic interaction than those eye-catching fairness fights.

As noted by COASE (1988, 162), even the simplest market transaction involves splitting some surplus, but not each and every market transaction is consorted with fairness fights. Fairness fights are hardly conceivable in case that the parties entertain matching ideas about fairness, and these are the cases where perceptions of fairness are of particular importance, precisely because they help avoiding costly fights. Without some underpinning in terms of mutually accepted entitlements and obligations, even the most trivial economic interactions are hardly conceivable, but in practice they go through, largely unnoticed SCHLICHT (1998, 29-32).

Fairness judgements are brought about by generalization. As KAHNEMAN *et al.* (1986, 736) explain, they arise by evaluating a transaction in the light of a reference transaction, which serves as a standard for comparison. If the given transaction deviates from the reference transaction, this is considered unfair. The reference transaction is obtained by generalizing from normal cases. It provides a basis for fairness judgements because it is normal, not necessarily because it is “just.”

We see this in everyday life. If people bargain, they refer to similar other cases. If one party finds, for the issue under dispute, a strong analogy with an established normal pattern, this is of advantage and can be exploited.

4 GENERALIZATION OF ATTITUDES

One of the most important aspects of generalization relates to the influence of the nature of work on personality and attitudes. It has been found that complexity of work induces intellectual flexibility, independently of the selection processes that draw men into particular fields of work and independently of men’s efforts to mold their jobs to fit their needs, values, and capacities (KOHN and SCHOOLER 1983, 104; MILLER *et al.* 1985). Parental values and educational style generalize

from work experience (KOHN, 1959, 1976; PEARLIN and KOHN, 1966), and religious rituals shape religious attitudes (SOSIS, 2003).

Further, a number of studies on “learned industriousness” suggest generalization of effort and persistence across tasks: Subjects who had completed a difficult task put significantly more effort into mastering a further unrelated task than those who had completed a less demanding task (EISENBERGER, 1992; EISENBERGER and LEONARD, 93; HICKMAN, 1998). A similar generalization occurs with regard to creativity: Creative performance on one task generalizes to creativity on other tasks, and divergent thinking on one issue generalizes to divergent thinking on other issues (EISENBERGER *et al.*, 1999; EISENBERGER and SHANOK, 2003).

5 GENERALIZATION OF GROUP CHARACTERISTICS

Group effects on individual judgement and behavior are pronounced. Group forces induce erroneous judgement even in objectively quite unambiguous cases (ASCH, 1987, 450-73). Social psychology takes the view that a group affects individual behavior and attitudes through “self classification”: If a person joins a group this will induce him to emphasize behaviours and attitudes that he perceives distinctive for that group (TURNER, 1987). Classifying himself as a group member changes his attitudes and behavior significantly in this direction, often unintentionally and subliminally. This process works toward uniformity within the group and generates a more pronounced ingroup-outgroup difference. It accentuates and augments group distinctions.

At the same time, self-perception as a group member molds identity and motivation. Group identity is enhanced by the generalization processes working on the level of routines (Section 2). Shared routines shape shared identities, and this affects work motivation, just as religious rituals mold and stabilize religious identities and behavior.⁴

6 GENERALIZATION IN THE THEORY OF THE FIRM

All the processes of generalization sketched above carry important implications for the theory of the firm: Self-classification suggests that a firm must be conceived as perceptual entity: A firm is what is perceived as a firm. This perception and entailed self-classification molds identities and behavior. As generalization rests on the perception of regularities, it renders perception behaviorally relevant and gives rise to the perceptual theory of the firm (SCHLICHT 1998, 240f.; SCHLICHT, 2005).

⁴The importance of identity for economically relevant behavior is emphasized in AKERLOF and KRANTON (2000). Contributions in sociology and political science and sociology on the topic abound.

Routines, and the learning of routines, depend on generalization (Section 1). Coordination depends on authority and fairness, and both are related to generalization (Sections 2-3). The firm shapes behaviors. As discussed in Section 4-5, this involves generalization processes as well.

Further, the interpretation of the employment relationship by the workers is matter of attribution that is governed, again, by generalization. If the firm, in its dealing with its customers, is strictly profit-oriented, the workers will notice and will conclude that the firm treats them alike; any benefits will be scrutinized, and interpreted as an incentive that is given in order to lure them into behavior that is in the firm's interest, but not in their own, just as it is the case with the firm's dealings with its customers. Such work attitude is undesirable.⁵ Conversely, a firm that treats its customers more kindly may reap ample returns in terms of improved work attitudes of the workers, even if the generosity toward its customers may seem incompatible with straightforward profit seeking at first sight.

7 LOCAL CULTURE

In a number of studies, Gregory Clark (1987a; 1987b; 1989a; 1989b) has argued convincingly that labor productivity of English workers has exceeded that of comparable workers from Eastern Europe, India, Japan and elsewhere by a factor of four. As this observation cannot be rationalized by traditional reasons, such as use of capital and machinery, technology, management, property rights, interest rates, or transaction costs, the mysterious cause for these persistent differences in labour productivity has aptly been labeled the "factor C" by MOKYR (2003).

The "factor C" is localized. As MOKYR (2003) notes, "Mexican or Indian workers migrating to high-productivity economies do not bring their factor C with them." They leave it behind at home and become as productive as the workers in the guest country. This would give an explanation why, in the sixties, guest workers were invited on a large scale to come to West Germany, and the alternative to move capital rather than labor by building factories in their home countries was not the preferred option, in spite of the higher wage payments entailed by moving workers rather than equipment. Because of its localized nature, Gregory Clark has referred to the "factor C" as "local culture." This factor, rather than capital,

⁵See SCHLICHT (2004) for an elaboration of this argument. Attribution theory refers in this context to the "consistency" requirement, rather than to generalization: A cause must apply across situations in order to be perceived as a cause. As such consistency refers to generalization across cases, the terminology used in this paper seems defensible. It serves to highlight the unifying force of "generalization." Another way to express these ideas would be to refer to "clarity", as in SCHLICHT (1998).

or technology, or education, remains important and seems the driving force behind the increasing economic divergence between industrialized and developing countries (CLARK and FEENSTRA, 2003).

The factor C may appear less enigmatic in view of what has been said about the generalization of attitudes (Section 4). Erecting a new factory in a country without any industrial tradition would require shaping industrial attitudes within a firm, but in a non-industrial environment. This may be much more difficult to achieve than shifting worker to an environment that is permeated by these attitudes already. In a non-industrial society, generalization works against the formation of industrial attitudes, just as it eases the maintenance of these attitudes in industrial societies.

8 GENERALIZATION AND PUNCTUATION

Generalization may induce punctuation – sudden episodes of change punctuating a slow evolutionary process. Consider an environment that changes smoothly. A gradual and adaptive response to the changes in the environment may call for successive replacements of traits $a, b, c, d,$ and e by traits $\alpha, \beta, \gamma, \delta,$ and ϵ . In presence of generalization, it is difficult to move smoothly from (a, b, c, d, e) to $(\alpha, \beta, \gamma, \delta, \epsilon)$ in a stepwise manner. It is difficult to sustain α in (α, b, c, d, e) . Generalization tends to replace the α by a here. It may be easier to sustain α, β in (α, β, c, d, e) , but it is still the case that generalization works toward replacing either α or β by a or b . Similarly, d, e is difficult to sustain in $(\alpha, \beta, \gamma, d, e)$ and it is even more difficult to sustain e in $(\alpha, \beta, \gamma, \delta, e)$. Generalization works against these combinations. It will impede the first steps and will accelerate the later adjustments when it would appear from a purely instrumental point of view that smooth and gradual adjustment path would be called for.⁶ This is illustrated in Figure 1.

9 STRUCTURE, CHANGE, AND GENERALIZATION

Generalization is obviously a structuring force: It fashions interdependencies and over-all connections between sundry organizational features and makes them intert in particular ways, comparable to bar magnets that tend to cling together

⁶The term “punctuation” has been introduced by ELDRIDGE and GOULD (1972) in paleontology. The idea is central to Piaget’s (1967) learning theory and his distinction between “assimilation” and “accommodation.” (“Assimilation” refers to the integration of new elements into a given cognitive structure, and “accommodation” refers to a change in cognitive structure – a punctuation.) The analogous idea is employed Kuhn’s 1970 theory of the evolution of science in his distinction between “normal science” and “scientific revolutions,” corresponding to Piaget’s “assimilation” and “accommodation.” The punctuation idea is obviously implicit in Marx’s writings. It has been re-introduced into economics by SCHLICHT (1979), MOKYR (1990), BOULDING (1992), and NORTH and DENZAU (1994); see also FIORI (2002).

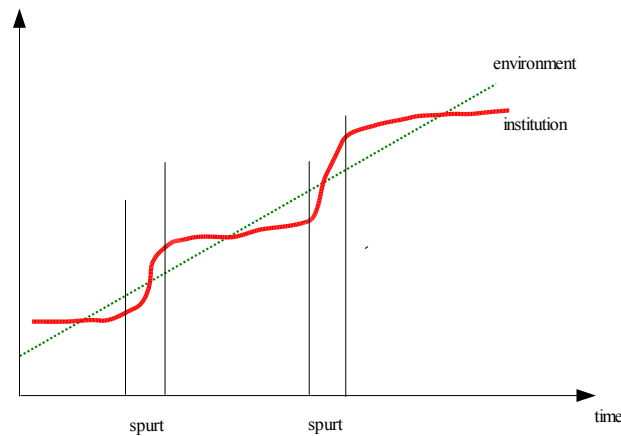


FIGURE 1. In a smoothly changing environment, generalization induces institutional adaptation punctuated by spurts.

in certain arrangements and resist others. For example, the policies adopted in dealing with customers must fit with the allocation of responsibilities and the principles governing compensation, promotion, and dismissal. Such interdependencies may contribute to better understand the advantages of integration, as well as its limitations (SCHLICHT, 2005).

The theory of change must presuppose structures that engender change, and in this sense, generalization may help to elucidate processes of institutional change. The argument about punctuation (Section 8) has illustrated the point that some features of change may be fruitfully eliminated by taking phenomena of generalization into account.

Generalization has been portrayed here as an overarching, albeit quite abstract, tendency of the human mind. It is possible to conceive evolutionary arguments that account for the feature (SCHLICHT, 2000). Yet with regard to institutional analysis we may take psychological propensities safely as givens, as the speed of institutional change is so much faster than change of human nature – “Economic systems, such as the structure of an industry, may be transformed within a single generation.” COASE (1978, 244). In biological terms, the very flexibility of culture eases the selective pressure for changes in human nature, as it permits adjustments to changing circumstances without necessitating changes on the genetic level.

Being formal, generalization is devoid of substantive content. In this sense it is comparable to rationality and, just like rationality, it helps to subsume and interpret phenomena that are difficult to account for otherwise. And, just like rationality, it is an ancillary concept that loses grip if pushed too far.

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