

A Genetic Reconstruction of Modern Social Theory: An Approach Grounded in Error-Tolerant Political Philosophy, Error-Tolerant Economics, and Error-Tolerant Pedagogy

ZHOU Zhifa

Zhejiang Normal University, Zhejiang, China

This article takes error-tolerant political philosophy as its theoretical point of departure and, together with error-tolerant economics and error-tolerant pedagogy, develops a genetic account of the formation of social relations. Error-tolerant political philosophy introduces trial and error into the analysis of the state of nature and advances the concepts of trial-and-error interdependence, the right to trial and error as a primordial right, and reciprocal empowerment, explaining why actors cannot be epistemically and practically self-sufficient and how qualifications to engage in trial-and-error practices acquire social recognition. Error-tolerant economics examines how trial-and-error costs, trial-and-error competence, trial-and-error direction, and the primordial right to trial and error shape the allocation of trial-and-error opportunities before and during the formation of differences in wealth, identity, and status. Error-tolerant pedagogy examines how knowledge, experiences of error, and effective methods generated through trial-and-error practices become social knowledge through preservation and intergenerational transmission. Together, these approaches raise a distinct sociological question: how do actors with limited knowledge and capacities, bound by trial-and-error interdependence, form relatively enduring social relations as they jointly confront and address shared problems, and how do those relations acquire relative stability through repeated practice and further give rise to norms, organizations, institutions, and social structures? On this basis, the article proposes error-tolerant sociology, with trial-and-error interdependence as its genetic point of departure, to explain the formation and structuring of social relations and the emergence of social structures.

Keywords: genetic reconstruction, trial-and-error interdependence, primordial right to trial and error, subject formation, error-tolerant sociology

The Genetic Limits of Modern Social Theory

One of the major contributions of modern social theory has been to relocate actors within social relations and historical processes. This can be seen in Marx's analyses of relations of production and of human needs and capacities (Marx, 1978; Marx & Engels, 1978), Durkheim's account of social facts (Durkheim, 1982), Mead's theory of the social self (Mead, 1934), and, later, Bourdieu's analysis of habitus and practice (Bourdieu, 1977), Foucault's examination of power-knowledge (Foucault, 1977), Giddens's theory of structuration and reflexive monitoring (Giddens, 1984), and Habermas's analysis of the lifeworld and communicative action (Habermas,

1984; 1987). Despite their substantial differences in ontology, methodology, and conceptions of the actor, these theories converge on an important insight: actors are not fully formed subjects existing prior to society, but are formed through social relations, institutional arrangements, and ongoing practices. The question of how society shapes actors has consequently become one of the central concerns of modern social theory.

Yet recognizing the social formation of the subject does not exhaust the problem of subject formation. A more specific genetic question remains: how are the knowledge, capacities, and practical conditions on which actors' social formation depends generated? Individuals are able to judge, choose, and act not simply because they are situated within particular social structures, but also because they have acquired particular forms of knowledge, experience, and practical capacity, and because they have some possibility of entering the relevant fields of practice. None of these conditions exists naturally or in fully developed form. Knowledge must be generated, preserved, and transmitted through prior practice; capacities must be gradually accumulated through concrete practice; and the kinds of practice that different actors can enter, as well as the opportunities they have to participate in them, are themselves socially conditioned. The social formation of the subject therefore concerns not only how existing knowledge, norms, and institutions enter into the individual, but also how these social achievements are themselves produced and how different actors acquire opportunities to participate in their production.

From this perspective, this genetic problem can be further analysed in terms of three interrelated dimensions. The first concerns qualifications for practice and the rights governing access to it: why must actors with limited knowledge and capacities enter unknown domains in order to explore them, and how are their qualifications to do so socially recognized and limited? The second concerns opportunities for practice: even where actors possess, in principle, the qualification to act, why do different individuals and groups enter different fields of practice, obtain unequal opportunities to participate in them, and consequently accumulate different levels of knowledge and capacity? The third concerns the continuity of knowledge: how can experiences of success and error generated through individual and collective practice transcend particular lives and local contexts, and, through preservation, systematization, and transmission, become social knowledge upon which later actors can draw? These three questions concern rights, opportunities, and knowledge respectively, but they point to the same more fundamental proposition: the conditions that enable actors to know the world, develop their capacities, and participate continuously in social practice are themselves historically generated.

This problem becomes particularly clear in classical political philosophy. When Hobbes and Locke employ the state of nature, and Rawls later employs the original position, as theoretical devices through which to analyse political order and its legitimacy, their actors already possess certain capacities for cognition, judgment, and choice. Hobbes's individuals are capable of deliberating about possible courses of action and their consequences (Hobbes, 1651/1996); individuals in Locke's state of nature are capable of apprehending the law of nature through reason (Locke, 1689/1988); and the parties in Rawls's original position are modeled as capable of rational choice (Rawls, 1999). These theories do not entirely neglect human capacities or their development. Rather, within the theoretical devices they construct, certain basic capacities function as starting conditions for the analysis of political order. A logically prior question can therefore be posed: if established states, institutions, and systems of knowledge are provisionally stripped away, how does an actor with limited knowledge and capacities initially acquire the knowledge and capacities for action necessary for self-preservation and development?

Accordingly, what this article describes as a **genetic advance** in modern social theory does not seek to replace the rich sociological literature on subject formation. It seeks instead to push the analysis one step further, towards the question of how the knowledge, practical opportunities, and conditions of rights upon which the social formation of actors depends are themselves generated. This question leads, respectively, to error-tolerant political philosophy's analysis of the primordial right to trial and error and reciprocal empowerment (Zhou, 2018; 2019), which this article further develops through the concept of trial-and-error interdependence; error-tolerant economics' analysis of the factors that shape differentiated opportunities for trial and error (Zhou, Jiao, & Luo, 2022); and error-tolerant pedagogy's analysis of how teachers' trial-and-error experience can be transformed into educational resources available to later learners (Zhou, Tan, & Dai, 2020). Once these questions are situated in social settings in which large numbers of actors, limited in both knowledge and capacities and bound together by trial-and-error interdependence, live together over time, a further question arises that cannot be answered by political philosophy, economics, or pedagogy alone: how does trial-and-error interdependence, through sustained practices of confronting and resolving shared problems, develop into relatively stable social relations, and how do those relations become progressively rule-governed, organized, and institutionalized through repeated interaction, eventually giving rise to social structure?

Error-Tolerant Political Philosophy and the Genetic Extension of Modern Social Theory

Building on the preceding discussion, if the inquiry is pushed further to ask how human knowledge, powers of judgment, and qualifications for action themselves come into being, the analysis must return to a more fundamental question in political philosophy concerning the original condition of human beings. Error-tolerant political philosophy accordingly reinterprets the "state of nature". The state of nature is not an empirical reconstruction of prehistoric society, but an analytical theoretical device designed temporarily to strip away established states, institutions, systems of knowledge, and arrangements of rights, so as to ask how actors with limited knowledge and capacities, confronted with an uncertain world, acquire the knowledge and capacities for action necessary for their own preservation and development. The crucial task is not to answer once again the question of why the state emerges, but to bring back into the field of explanation those capacities of the subject that the social-contract tradition has, to varying degrees, already presupposed (Hobbes, 1651/1996; Locke, 1689/1988; Rawls, 1999). The state of nature is thus not merely a condition in which political authority has yet to be established; it is also a condition in which knowledge, capacities, conceptions of rights, and qualifications for action are themselves still in the process of formation.

Introducing trial and error into the state of nature further changes the starting point of the inquiry. The question is no longer merely why individuals who already possess basic cognitive and practical capacities need to establish a political community, but rather how human beings initially acquire, through their own practices and those of others, the knowledge and capacities required to understand the world, judge possible courses of action, and preserve and develop themselves, without presupposing that they already possess established knowledge for survival or developed capacities for action. More specifically, individuals in the state of nature do not know in advance which foods are safe to eat, which tools will work, or which forms of cooperation can be trusted; nor can they independently verify all the knowledge relevant to their survival and development. They must therefore observe the practical outcomes of others, learn from others' successes and failures, and allow their own practical experience to be observed and used by others.

What emerges is not merely mutual need in a general sense, but a more fundamental form of trial-and-error interdependence: in order to preserve and develop themselves, individuals need to draw upon the trial-and-error practices and successful practices of others to acquire experience they do not yet possess, while others, in turn, depend upon the experience generated through the practices of those individuals. From the standpoint of the actor, this relationship can be expressed as follows: “I need to observe the trial-and-error practices and successful practices of others in order to preserve and develop myself; others likewise need to observe my trial-and-error practices and successful practices in order to preserve and develop themselves.” Trial-and-error interdependence therefore means that individuals are neither wholly closed nor self-sufficient epistemic subjects, and that no individual can, by relying solely on existing personal knowledge, complete all the exploration required for survival and development. This practical need for the experience of others provides an initial basis for mutually recognizing one another’s space for exploratory practice and creates the normative possibility of further reciprocal empowerment. Trial-and-error interdependence does not itself automatically generate rights; rather, it provides an important practical basis for explaining, in terms of common survival and development, why others should be permitted to engage in trial and error.

On this basis, error-tolerant political philosophy advances its first theoretical pillar: the right to trial and error—that is, freedom in domains of innovation—has the character of a primordial right. To describe it as primordial does not mean that specific subsidiary rights, such as the rights to life, property, enterprise, and education, can be logically deduced from the right to trial and error. Rather, it emphasizes that these rights, as normative claims and institutional forms, are themselves historically generated. Life as a factual condition of human existence precedes the concept of a “right to life”; yet the kinds of protection life should receive, the boundaries of that protection, and the forms of conduct that constitute unacceptable violations have not existed from the outset in fully developed institutional form. Likewise, the possession and use of things can precede modern institutions of property, but questions concerning which forms of possession deserve legitimate recognition, how the boundaries of property rights should be drawn, and which restrictions are legitimate have been worked out through long processes of social practice. The primordial character of the right to trial and error therefore lies first and foremost in its generative capacity. Actors qualified to engage in trial-and-error practice can raise new problems, attempt new methods, test existing rules, identify interests and claims to rights that have not previously been articulated, and promote the recognition and institutionalization of new rights. Specific subsidiary rights, by contrast, relatively stabilize outcomes that have already been confirmed through prior practice. The primordial right to trial and error is oriented towards a future that has not yet been determined, whereas subsidiary rights specify what actors may already do, possess, and legitimately claim from others within an existing social order.

Reciprocal empowerment, the second pillar of error-tolerant political philosophy, further argues that the primordial right to trial and error and the subsidiary rights generated from that right cannot be established merely through unilateral declarations by individuals acting in isolation; rather, they acquire concrete institutional form through relations of mutual recognition, authorization, and limitation among members of society. In a democratic society, the first reciprocal empowerment consists, in principle, in members of society mutually recognizing one another as qualified to enter unknown domains, raise new questions, attempt new solutions, and acquire the corresponding outcomes. Equality in this sense does not mean that everyone may unconditionally enter every professional field, command equal public resources, or transfer the risks of their actions arbitrarily to others. It

means, rather, that no person should be excluded a priori, solely on the basis of a fixed status, from the possibility of exploring the future and generating new outcomes.

As societies expand and public affairs become more complex, fields such as national defence, monetary policy, public health, large-scale infrastructure, and the governance of major technologies cannot be handled directly and collectively by all members of society. Members of society must therefore authorize political institutions, professional organizations, or other public actors to exercise higher-level primordial powers of trial and error in particular domains, enabling them to formulate proposals, organize collective action, and make public decisions on behalf of the community. Such authorization, however, cannot be understood as the unilateral surrender of rights by members of society. It constitutes a second reciprocal empowerment: while authorizing public actors to exercise higher-level primordial powers of trial and error, members of society should simultaneously acquire a range of specific subsidiary rights—including rights of oversight, criticism, information, education, participation, and correction—through which they can constrain, test, and correct the exercise of public primordial power. Reciprocal empowerment thus produces a two-way structure. On the one hand, society confers upon public actors the primordial power of trial and error required to address common problems; on the other hand, such authorization must be accompanied by specific subsidiary rights through which members of society can monitor, test, and correct the exercise of public power. The logic of “one for many” is therefore not merely an illustration of the primordial character of the right to trial and error. It also reveals a fundamental rights structure within democratic politics: through reciprocal empowerment, the primordial power of trial and error generates and allocates specific subsidiary rights, while those rights in turn constrain the exercise of primordial power and prevent authorized power from becoming detached from the basis on which it was conferred.

This structure of rights also changes how social action should be understood. The primordial right to trial and error and specific subsidiary rights are not merely two different categories of rights; they correspond to two different states of practice. The former primarily concerns problems for which no settled answer yet exists, whereas the latter rests more heavily on knowledge, rules, and boundaries of rights that have already acquired relatively stable recognition. The meaning of the same form of social action must therefore be understood in relation to the problem situation, state of knowledge, and stage of practice in which it occurs. Consider, for example, criticism and oversight. When they concern exploratory practices—such as public-health measures introduced in the early stages of a novel infectious disease (Zhou & Qu, 2021; Zhou, Qu, & Shen, 2021)—public evaluation cannot reasonably presuppose that decision-makers possess a complete answer in advance. It should instead ask whether the problem has been adequately identified, whether the basis for decision-making has been disclosed, whether alternative courses of action have been seriously compared, whether risks have been unreasonably shifted onto others, and whether previous judgments can be tested and revised when new facts and evidence emerge. Under these conditions, the principal function of criticism and oversight is not to require public authorities to avoid every failure, but to examine whether the primordial power of trial and error is being exercised within reasonable boundaries and to prevent exploratory authority from becoming detached from its basis in reciprocal empowerment. By contrast, where knowledge, rules, and boundaries of rights have already become relatively stable, criticism and oversight function primarily to protect subsidiary rights, correct violations, assign responsibility, and prevent abuses of power. If holders of public power violate property rights, disregard lawful procedures, or use public office for private gain, such conduct cannot properly be justified as exploratory trial and error or reasonable failure. Demonstrations and protests can be understood in the same way. When public

problems have no settled answers, social protest may function as a mechanism through which dispersed knowledge is expressed, competing judgments are introduced, and existing proposals are compelled to undergo renewed scrutiny. Where the boundaries of existing rights are relatively clear and specific subsidiary rights have been infringed, by contrast, protest is more likely to serve the protection of established rights, the enforcement of existing rules, and the correction of abuses of power. The social meaning of criticism, oversight, demonstrations, and protest therefore cannot be determined solely by their outward form. It must be interpreted in relation to the problem situation, structure of rights, and stage of practice in which such action occurs.

This genetic approach does not deny the historical and generative mechanisms identified by the traditions discussed above. Its distinctive question concerns what occurs within such processes of formation: who is able to enter unknown domains and engage in exploration; who is qualified to advance competing judgments and proposals; how such qualifications acquire recognition; how new practical outcomes are transformed into specific rights; and how those rights acquire relatively stable institutional forms through reciprocal empowerment.

Error-tolerant political philosophy, therefore, does more than add a “trial-and-error” dimension to modern social theory. It seeks to bring trial-and-error interdependence, the primordial right to trial and error, specific subsidiary rights, and reciprocal empowerment into a single genetic process. Yet once this process enters the real social world of sustained interaction among large numbers of actors, political philosophy alone can no longer exhaust the questions that arise. Political philosophy can ask why the primordial right to trial and error is legitimate, how it acquires recognition, and how it should be limited; but it cannot, by itself, explain why trial-and-error interdependence develops into enduring social relations, how cooperation, competition, domination, oversight, and conflict arising around the primordial right to trial and error and specific subsidiary rights acquire relative stability, or how these repeatedly enacted interactions further give rise to social positions, organizational rules, institutional arrangements, and social structures. It is precisely at this shift in the level of explanation that the need for a distinct error-tolerant sociology begins to emerge. Error-tolerant sociology does not simply transplant the concepts of rights developed in error-tolerant political philosophy into sociology. Rather, it takes social relations and their structuring as its own distinctive objects of explanation and examines how rights and trial-and-error practices, once they enter sustained interaction among multiple actors, generate, sustain, and transform social relations and social structures.

The Genetic Extension of Modern Social Theory through Error-Tolerant Economics and Error-Tolerant Pedagogy

Error-tolerant economics (Zhou et al., 2022) enters sociological analysis by examining the prior allocation of opportunities for social practice. Rather than beginning only with already established differences in wealth, identity, and social status, this perspective moves the analysis further upstream, to the conditions actors face before entering particular fields of practice and during the process of entry itself. It advances four interrelated core concepts—trial-and-error costs, trial-and-error competence, trial-and-error direction, and the primordial right to trial and error—and emphasizes that these do not operate in isolation. Through their combination at different levels and in different forms, they jointly shape the trial-and-error opportunities available to actors. Whether different actors can enter a particular field of social practice depends not only on their willingness to act, but also on whether they can bear the relevant trial-and-error costs, possess the necessary trial-and-error competence, have real scope to choose or influence the direction of trial and error, and possess the primordial right to trial and error required to enter that field. States, organizations, families, and individuals confront

problems at different levels and differ in their resource conditions, levels of competence, trial-and-error directions, and corresponding boundaries of rights. The trial-and-error opportunities available to them therefore display clear hierarchical differences.

This perspective provides a more explicitly genetic starting point for the analysis of social stratification. Existing sociology has already explained social differences through class, resources, power, identity, cultural capital, and opportunity structures (Weber, 1978; Bourdieu, 1986; Tilly, 1998). Error-tolerant economics does not reject these approaches, but asks a further question: before pronounced differences in wealth, identity, and social status have fully emerged, are different actors already situated within unequal structures of trial-and-error opportunities? Who can enter exploratory fields with high potential returns or significant social consequences? Who can bear substantial trial-and-error costs while continuing to develop practical competence? And who possesses the institutional qualification or power to determine which actors are permitted to enter particular fields of practice? From this perspective, social inequality may be manifested not only in “who obtains how much after succeeding”, but also, at an earlier stage, in “who is able to try before success, what they are able to try, and under what conditions they are able to continue trying.” Error-tolerant economics therefore does not seek to replace analyses of class, resources, and power with the concept of trial-and-error opportunity. Rather, it seeks to reveal the mechanisms of practical access and opportunity allocation embedded in the formation and reproduction of social differences.

More fundamentally, trial-and-error opportunities exhibit pronounced cumulative effects and feedback dynamics. Existing resources can strengthen trial-and-error competence, while stronger trial-and-error competence may expand the range of practical fields an actor can enter and improve the conditions under which sustained exploration is possible. Successful outcomes that receive institutional recognition may further give rise to a corresponding right to do right—that is, the right of actors to have the successful outcomes of their trial-and-error practices institutionally recognized, protected, possessed, used, and allocated, a right that takes concrete form through specific subsidiary rights—which may be expressed in, or support the formation of, wealth, identity, prestige, and other subsidiary rights. These, in turn, can become conditions for acquiring resources, accumulating competence, and gaining access to higher-level trial-and-error opportunities in the next round. The early allocation of trial-and-error opportunities may therefore itself constitute a prior mechanism of social selection whose effects accumulate and intensify through subsequent cycles. Social stratification is consequently not only an outcome in distributive terms; it also has processual and cumulative dimensions produced through the continuing generation and reallocation of trial-and-error opportunities. This process can be represented as follows: trial-and-error opportunities → accumulation of competence → practical outcomes → recognition of outcomes → formation of the right to do right, encompassing its specific subsidiary rights → renewed access to trial-and-error opportunities. The allocation of economic resources and practical opportunities therefore concerns not only how existing social differences are maintained, but also which actors can continue to enter new fields of practice, accumulate higher levels of competence, and thereby participate in the generation and reproduction of social structure.

Error-tolerant pedagogy (Zhou et al., 2020) further reveals the epistemic conditions of social continuity and development. Once trial and error is introduced into the state of nature, the fundamental problem confronting individuals is no longer merely “how to acquire given knowledge”, but “how to form and develop the knowledge and capacities they require under conditions of uncertainty.” Because no individual can independently bear all the trial-and-error costs required to acquire the knowledge necessary for survival and development, people must

observe and draw upon the trial-and-error experiences and successful practices of others in order to reduce repeated exploration; others face the same need. What emerges is therefore not merely an exchange of information, but a relationship of knowledge interdependence grounded in the sharing of experience and the economizing of trial-and-error costs. As societies expand and the division of labor becomes more complex, individuals become increasingly unable to observe directly the entire range of practices undertaken by others. Society therefore requires institutional mechanisms through which errors, lessons, and effective methods dispersed across the practices of different actors can be transformed into knowledge that can be preserved, transmitted, and learned. Education is one of the most important of these mechanisms. It does not merely transmit existing knowledge; it also preserves, organizes, and interprets previous trial-and-error experience and transforms it into knowledge resources that later generations can inherit and test. The significance of education therefore lies partly in preventing later generations from repeatedly paying exploratory costs already borne by their predecessors, while preserving room for existing knowledge to be criticized, tested, and revised. If a society can neither accumulate the outcomes of previous exploration effectively nor allow established knowledge to be re-examined and corrected as circumstances change, the transmission of knowledge may deteriorate into mechanical replication, while society repeatedly reproduces avoidable errors and continues to incur unnecessary trial-and-error costs.

Error-tolerant pedagogy is therefore concerned not merely with how individuals “learn from errors”, but with a further question: how can experience generated through practices for which individuals have borne trial-and-error costs be recorded, organized, preserved, and institutionally transmitted so that it becomes social knowledge available to others? Once this question enters the field of education, it requires a reconsideration of the epistemic relationship between teachers and students. Conventional teaching generally requires teachers to present students with knowledge that has already been selected and organized as correct (Zhou et al., 2020). Yet the explorations through which teachers themselves acquired such knowledge and formed such judgments, the reasonable errors that were difficult to avoid under the prevailing conditions of knowledge, and the processes through which they identified and corrected those errors do not necessarily become part of formal teaching. Drawing on the logic of trial-and-error interdependence in the state of nature, error-tolerant pedagogy proposes that, since students cannot personally repeat every exploration already undertaken by teachers and earlier generations, teachers should, under appropriate conditions, share not only the correct knowledge ultimately acquired but also their own exploratory errors that possess learning value, together with the processes through which those errors were corrected. Students would then learn not only “what is correct”, but also “how an error arose, why that judgment appeared reasonable at the time, and how new evidence led to its revision.”

Such sharing does not require teachers indiscriminately to disclose every personal mistake, nor does it seek to rationalize negligence, misconduct, or failures of responsibility. Its purpose is to transform epistemically valuable experiences of reasonable trial and error under conditions of uncertainty into knowledge resources that students can use directly. In this sense, a teacher’s active sharing of his or her own reasonable errors performs a distinctive educational function: it enables students to make use of experience for which the teacher has already paid trial-and-error costs, thereby reducing unnecessary repetition while also allowing students to understand how knowledge itself is formed through the identification of error, comparison of evidence, and continuing revision. Existing educational research has devoted considerable attention to learning from one’s own errors and from the errors of others (Große & Renkl, 2007; Metcalfe, 2017). There is also related research on teacher self-disclosure (Cyanus & Martin, 2008) and on teachers’ own errors and their management (Lake, 2017; Zhou et

al., 2020). Error-tolerant pedagogy poses a more specific question: can teachers' own exploratory errors be systematically understood as transmissible educational resources, and do teachers have an obligation to actively transform those elements of such errors that have public learning value into knowledge available to students?

The transformation of error experience from private experience into the shared experience of a community can also be illuminated by traditions of self-reflection and confession found in certain social and cultural settings. Religious confession provides one example. Its meaning is primarily situated within particular religious ethical traditions and systems of belief and cannot simply be equated with a modern mechanism of public correction. Nevertheless, practices such as acknowledging wrongdoing, reflecting upon oneself, and seeking correction draw attention to a more general social mechanism through which individual errors enter collective experience via expression, evaluation, and reflection. Historical analyses of confession likewise show that it has operated as an important practice through which individuals articulate aspects of themselves and subject those aspects to judgment within wider normative orders (Foucault, 1978). From the perspective developed here, religious confession therefore offers a historical and cultural form through which error experience can be observed as something expressed, evaluated, and processed within a community. Although modern societies have witnessed processes of church–state separation and profound transformations in the organization of public life (Casanova, 1994), mechanisms of acknowledging error, public reflection, and seeking correction have not disappeared. They persist in different forms within educational practice, organizational learning, professional communities, and public discussion.

If the preceding analysis of how trial-and-error experience is preserved, reflected upon, shared, and transformed into social knowledge is extended to the public sphere, error-tolerant pedagogy must also ask a further question: when public decision-making itself constitutes a trial-and-error practice with broad social consequences, how can the experiences of error and processes of correction generated through such practice be transformed into learning resources that members of society can use collectively? Individuals or organizations exercising higher-level primordial powers of trial and error may make decisions whose associated trial-and-error costs are borne by a much wider range of social actors. Accordingly, in addition to possessing the authority to make such decisions, they should also bear obligations to provide information and explanations, accept criticism, and participate in processes of correction. From the perspective of error-tolerant pedagogy, when political leaders publicly explain major processes of public trial and error, acknowledge errors that have already been identified and can be clearly articulated, and explain the grounds for policy adjustment and the process of correction, such practices can form part of political accountability (Bovens, 2007), while also serving as an important mechanism through which public trial-and-error experience can be transformed into a resource for social learning.

The question that error-tolerant pedagogy poses to sociology therefore extends beyond “How is knowledge transmitted?” to “How is knowledge produced, selected, preserved, disseminated, and institutionalized?” How does society preserve experiences of error? Which failures become incorporated into the public body of knowledge? Which actors possess the qualification to articulate and disseminate practical experience? Who has the authority to recognize a particular practice as erroneous or as an effective outcome? And who is able to transform local practical experience into formal knowledge? These questions move education beyond the analysis of knowledge transmission and into the domains of knowledge production, the allocation of power, and social stratification. Ultimately, they raise a more fundamental genetic question: How is the very knowledge on which society relies in shaping actors gradually formed through practical exploration, the comparison of experiences, error correction, and institutional recognition?

Conclusion

Although error-tolerant political philosophy, error-tolerant economics, and error-tolerant pedagogy advance our understanding of social questions from different points of entry—the generation of rights and reciprocal empowerment, the allocation of trial-and-error opportunities, and the accumulation and transmission of knowledge, respectively—they ultimately converge on a more fundamental genetic question for sociology: how do actors whose knowledge and capacities are limited and who are mutually interdependent form enduring social relations as they jointly confront and address problems, and how do those relations acquire relative stability through repeated practice and further give rise to norms, organizations, institutions, and social structures?

More specifically, error-tolerant political philosophy asks how rights and powers acquire legitimacy; error-tolerant economics examines how trial-and-error costs, trial-and-error competence, trial-and-error direction, and the allocation of the primordial right to trial and error shape the practical opportunities available to different actors; and error-tolerant pedagogy considers how the knowledge and experience generated through previous trial-and-error practices are accumulated, preserved, and transmitted across generations, thereby contributing to the formation of actors' knowledge and capacities. Yet it is precisely when these rights, opportunities, forms of knowledge, and capacities enter sustained interaction among multiple actors that a new level of explanation emerges—one that cannot be exhausted by any of the foregoing approaches taken separately: how do different actors establish relatively enduring social relations under conditions of trial-and-error interdependence; how do these relations, as they are repeatedly enacted, mutually recognized, and rendered rule-governed, gradually develop into social positions, organizational forms, institutional arrangements, and social structures; and how do they undergo stabilization, differentiation, conflict, and reorganization as interests diverge, power is allocated, and external conditions change?

Error-tolerant sociology is therefore neither a mechanical aggregation of concepts from these existing branches nor their simple transplantation into sociology. Rather, taking trial-and-error interdependence as its genetic foundation and social relations and their structuring as relatively autonomous objects of analysis, it examines how individual practices become embedded in sustained interaction among multiple actors, how existing rights, opportunities, knowledge, and capacities are organized through interaction into relatively stable relational forms, and how the relations and structures thus formed, in turn, shape actors' subsequent possibilities for practice while themselves being maintained, adjusted, or reconstructed in response to new problems, differences of interest, and shifts in power. It is in this sense that error-tolerant sociology is both an internal theoretical requirement arising from the further development of the system of error-tolerant philosophy and social sciences and a sociological framework that cannot be reduced to an appendage of its existing branches: it grows out of their common theoretical foundations while developing its own objects of analysis, core concepts, and explanatory mechanisms.

References

- Bourdieu, P. (1977). *Outline of a theory of practice* (R. Nice, Trans.). Cambridge, England: Cambridge University Press.
- Bourdieu, P. (1986). The forms of capital. In J. G. Richardson (Ed.), *Handbook of theory and research for the sociology of education* (pp. 241-258). New York, NY: Greenwood Press.
- Bovens, M. (2007). Analysing and assessing accountability: A conceptual framework. *European Law Journal*, 13(4), 447-468.
- Casanova, J. (1994). *Public religions in the modern world*. Chicago, IL: University of Chicago Press.
- Cayanus, J. L., & Martin, M. M. (2008). Teacher self-disclosure: Amount, relevance, and negativity. *Communication Quarterly*, 56(3), 325-341.

- Durkheim, E. (1982). *The rules of sociological method* (S. Lukes, Ed., W. D. Halls, Trans.). New York, NY: Free Press.
- Foucault, M. (1977). *Discipline and punish: The birth of the prison* (A. Sheridan, Trans.). New York, NY: Pantheon Books.
- Foucault, M. (1978). *The history of sexuality: Vol. 1. An introduction* (R. Hurley, Trans.). New York, NY: Pantheon Books.
- Giddens, A. (1984). *The constitution of society: Outline of the theory of structuration*. Cambridge, England: Polity Press.
- Große, C. S., & Renkl, A. (2007). Finding and fixing errors in worked examples: Can this foster learning outcomes? *Learning and Instruction*, 17(6), 612-634.
- Habermas, J. (1984). *The theory of communicative action: Vol. 1. Reason and the rationalization of society* (T. McCarthy, Trans.). Boston, MA: Beacon Press.
- Habermas, J. (1987). *The theory of communicative action: Vol. 2. Lifeworld and system: A critique of functionalist reason* (T. McCarthy, Trans.). Boston, MA: Beacon Press.
- Hobbes, T. (1651/1996). *Leviathan* (R. Tuck, Ed.). Cambridge, England: Cambridge University Press.
- Lake, E. (2017). To err is human: The management and emotional implications of teacher error. In T. Dooley & G. Gueudet (Eds.), *Proceedings of the Tenth Congress of the European Society for Research in Mathematics Education* (pp. 1122-1129). Dublin, Ireland: Dublin City University.
- Locke, J. (1689/1988). *Two treatises of government* (P. Laslett, Ed.). Cambridge, England: Cambridge University Press.
- Marx, K. (1978). Economic and philosophic manuscripts of 1844. In R. C. Tucker (Ed.), *The Marx-Engels reader* (2nd ed., pp. 66-125). New York, NY: W. W. Norton.
- Marx, K., & Engels, F. (1978). The German ideology: Part I. In R. C. Tucker (Ed.), *The Marx-Engels reader* (2nd ed., pp. 146-200). New York, NY: W. W. Norton.
- Mead, G. H. (1934). *Mind, self, and society: From the standpoint of a social behaviorist* (C. W. Morris, Ed.). Chicago, IL: University of Chicago Press.
- Metcalf, J. (2017). Learning from errors. *Annual Review of Psychology*, 68, 465-489.
- Rawls, J. (1999). *A theory of justice* (Rev. ed.). Cambridge, MA: Belknap Press of Harvard University Press.
- Tilly, C. (1998). *Durable inequality*. Berkeley, CA: University of California Press.
- Weber, M. (1978). *Economy and society: An outline of interpretive sociology* (G. Roth & C. Wittich, Eds.). Berkeley, CA: University of California Press.
- Zhou, Z. F. (2018). The construction of mistake-tolerant democracy based on the practical right “Right to trial and error”. *International Relations and Diplomacy*, 6(1), 40-53.
- Zhou, Z. F. (2019). Solving the century problem “modern transformation of China’s traditional Confucianism”—A mistake-tolerant democracy perspective. *Philosophy Study*, 9(5), 271-286.
- Zhou, Z. F., & Qu, P. (2021). The root cause of the failure of American COVID-19 governance based on the criticism of liberal democracy from error-tolerant democracy. *Philosophy Study*, 11(7), 533-547.
- Zhou, Z. F., Jiao, S. L., & Luo, X. S. (2022). Logic of China’s rise: From List’s model to List-Afa’s error-tolerant model. *Philosophy Study*, 12(8), 443-458.
- Zhou, Z. F., Qu, P., & Shen, Y. Z. (2021). A prerequisite for the successful governance of COVID-19 in the United States: Expansion of liberal democracy from politics to economy. *International Relations and Diplomacy*, 9(6), 244-258.
- Zhou, Z. F., Tan, X. H., & Dai, W. F. (2020). Confucius’ new teaching idea “sharing teachers’ errors” and new development for Chinese pedagogy. *US-China Education Review B*, 10(5), 216-227.