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Contribution of Professional Pedagogy to Decision-Making

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Abstract

The aim is to offer a contribution to the problem of decision-making in the world of the higher intellectual professions, considering the pedagogy as a paradigmatic profession in the social, caring, and helping field. Pedagogy is an ancient science and profession, like medicine and jurisprudence, as it is known. The professional practice, in the social field as in the health and in other fields, consists in reconnecting the complex phenomenology of each singular particular case to a more limited number of general cases, theories, or disciplinary casuistries. It is a question of making a diagnosis, in a broad sense of the term. For this procedure, both the positive inductivist approach, from many facts to the generalization, and the idealistic and deductive approach, from general a priori ideas to the particular, are obsolete. We then examine the pragmatistic concept of abduction and, more generally, the contributions of the most up-to-date methodology, just as it is applied in the practice of professionals.

Keywords: professional pedagogy, methodology, abduction, clinical method, Sozialpädagogik, social professions

*Il mio maestro era veramente molto acuto.
“Ma quali conclusioni traete da questa scoperta?” chiesi allora.
“Nessuna,” mi rispose “solo delle premesse.”*

*My teacher was really very intelligent.
“But what conclusions do you draw from this discovery?” I asked then.
“None,” he replied me, “just some premises.”*

(Umberto Eco, 1980)

1. Aim

Pedagogy is a fully fledged science in the wide field of the *human- sozial- geistes- Wurzschafts- Wissenschaften* or human- social- intellectual economics (sciences). A fundamental methodology is common to all these sciences: a beginning by problem posing and attempting solutions, subject to the rules of logical coherence and factual control; otherwise they cannot accurately call themselves sciences/*Wissenschaften*.

As such, it brings its contribution to other social sciences, particularly the problems of application of decision science in business and management. This is, from a general point of view, the fundamental aim of the present chapter.

Methodological considerations will broadly demonstrate their necessity and essence, as indeed was to be expected and is perfectly logical.

2. A profession and a science current with an ancient history: perhaps they can help us

Although the term seems to have appeared at the end of the fifteenth century, pedagogy as a science and a profession has over 2500 years of history, and this claim has a meaningful sense as many of the conceptual and operational tools and many technical terms date back to those remote origins, as well as subsequent developments.

Among the Greek-classical conceptualities of the ante litteram pedagogy, it will be enough to mention some of the most famous ones: ὁ διάλογος (the dialogue) in its two phases ἡ ειρωνεία; (irony) and ἡ μαιευτική τέχνη (the art of the midwife); γνωθι σεαυτόν nosce te ipsum (let know yourself) and condemnation of ὕβρις, the superb and arrogant violation of this character, tools and warning of the latter's evident momentum; πολιτεία (politics in the city-state), classic Logic and ῥητορεία (rhetorics) and all that pertains to political life, the art of public speaking, of obtaining consent, of constructing well-made sentences, ἡ ἐπιστήμη and οἱ λόγοι, two different ways of speaking about sciences and fields of study. Other examples of specific interest in our theme will bring us back to that historical period in their utmost importance, as we shall see.

But they are just some particularly emerging examples. Much of the Greek-class philosophy, including the described examples, can be summarized on the basis of the colossal *scientific culture* of that people: a knowing that it aroused our admiration, but that it was never intended for the application, even though it included electricity, magnetism, heat transformation in mechanical energy, and much more knowledge that would revolutionize human life in different periods, with particular regard to the last two to three centuries.

To understand today's professional pedagogy [1, 2], it is necessary to carefully consider the historical and cultural turning point of fundamental importance that came with the end of the proper modern era (sixteenth, twelfth, and eighteenth centuries, anticipating the beginning of some decades) with the Enlightenment, the bourgeois revolutions, the end of the modern or absolute state, the seizure of power by the bourgeoisie, and the Industrial Revolution and the related enormous changes and accelerated processes.

It was a turning point of fundamental and easily understandable importance for education, rapidly consolidating an educational system that has held up until 50 years ago but also for relationalities, society, the human psyche, and man in general.

In fact, in the nineteenth century, the Sozialpädagogik [3–5]^{1,2} was born; skittles like sociology, psychology, psychoanalysis, and many other disciplines that would have founded the corresponding social professions in the following century, responding to an increasingly strong, obvious, specific social demand, were born.

3. Method issues

From the teaching of Wilhelm Windelband (1848–1915) until today, the distinction between the sciences and between knowledges, between the various ways of using human creativity, must be traced not to the subject of study but to the method of study and professional application, also of professional application. Medicine, surgery, psychology, anthropology, and pedagogy study the same man, but with essentially different methods and professional applications.

¹ See also the abundant and significant production of social pedagogy of Émile Durkheim, widely accessible in public domain as for the work we'll mention.

² The complexive synthesis on Sozialpädagogik is in Ref. [5].

Generally speaking, the method of pedagogy, which identifies it and distinguishes it from other sciences and professions, is a composite method. Pedagogy is a field for collecting and incorporating different inputs, for integration, and for addressing educational purposes that are not the aims of the original sciences.

The methodology of pedagogy is articulated with continuity between two opposite and mutually exclusive polarities:

- The operational statistical methodology.
- The situational case study (casuistry) methodology.

The first methodological polarity, a search for measurable data in large populations to be treated with statistical methods, is widely present in the quantitative studies and researches of the social sciences, including an important part of pedagogy; in Italy we speak about *pedagogia sperimentale*. The components of the sample population can be correctly called “individuals.” We will not take away from this methodology in this chapter.

In the particular field of the scholastic pedagogy, the most relevant institutional pedagogy and in certain aspects non-secondary of Sozialpädagogik, a situational casuistic methodology has long been followed and for decades on this basis progressively increasing, and more essential elements of operational statistical method have been inserted and integrated.

In this chapter we will deal with the second polarity, which besides all is the canonical methodological choice for pedagogical counseling, interlocution, dialog (Socratic διάλογος but without ἀλήθεια), and more generally for the personal provision of the aid’s relationship specifically pedagogical.

It is the most suitable for the treatment of personal problems, of couples, family, parenting, and of single persons in social situations, including school and work.

This second choice of method currently takes the name of “clinical” method. In the use of this adjective, and of the corresponding noun, we can also recognize a meaning of etymological type. In classical Greek, κλινικός was an adjective referring to the intervention on the couch (κλίβη) where the patient was; that is to say, an intervention properly in situation, an intervention in which the professional enters, correctly and strictly, in the context, in the environmental contingency, of the recipient; and this is consistent with the way in which the professional practice of the medical doctor is intended to refer to the patient’s illness or disease, as is immediately evident. There is no substantivation: today’s “clinic” may correspond to ἡ κλινική τέχνη.

We should also remember the increasing use of the Anglo-American term clinic, to indicate a sports or musical session, for example, with an athlete, an artist, and an example of particular value, in which the great personage of human activity enters in the context of a team or a complex or a band or other human societies, to bring his own example in the very particular case in which the clinic takes place. And this is an exceptionally effective way of proceeding as education and Bildung, which generally requires limited time and efforts.

In this methodological approach, for the interlocutor, the Latin term persona is used, the actor’s mask which allows to recognize some characters and which was also used figuratively. The proponent of this term (in Greek πρόσωπον) which was to become the technical term for the social sciences was Johannes Damascenus (from Damascus, 675–749).

In a reciprocal way with respect to the statistical procedure, in the clinical method, every single subject is unrepeatable and must be considered with all its peculiarities. Doctors often say that they treat sick people and not diseases. A pedagogue could say that he cares for men who have complaints and not human problems.

The question, at this point, concerns general cases: it is understood that there is neither science nor higher intellectual profession without general laws and theories and general cases: so for a medical doctor (the diseases), as for a pedagogist (the casuistries of general cases), as for an architect (the construction science), and so on. How does one go back from particular cases to general cases?

The solution to the question lies in the human mediation of the qualified professional and with his experience, and in a little-known conceptuality, abduction (abduction), called also retro-ductio (retro-duction). Here is also the substantial contribution that pedagogy can bring to the decision-making process, as previously intended in this chapter.

The professional pedagogy, as in this particular regard as in all professional practice, involves the use of old *ἀπαγωγή* known by Aristotle (384–322 BC), used as a figure of speech in particular in the field of philosophy, logic and legal or juridical, approachable to *reductio ad absurdum* of Zeno from Elea (489–430 BC). This is used to justify the falsity of a statement underlining the absurdity of the consequences of its application.

The whole theoretical framework of reference for the profession pedagogy refers to the classic Pragmatism [6, 14, 15]³ or to a Neopragmatism current perspective.⁴ The⁵ concept of abduction was formulated by Charles S. Peirce (1839–1914) [14–17], as inference and not as an argument or a demonstration; it represents an alternative to induction and deduction, which provides an opportunity and a chance that we would call “corroboration” in accordance with the concept of the critical rationalism by Popper [19], with some similarity to the concept of “educated guess,” about which we’ll have to discuss later too.

4. The decision process in the pedagogical interlocution context: the abduction

In substance, and taking the topic of this contribution into account, we can describe synthetically the abduction as follows:

Rule	the general case A presents (or can present) the B ₁ , B ₁ , B ₂ , ... B _n , ... phenomenology
Data	the evidences B ₁ , B ₂ , ... B _n , ... of a particular case repeat aspects that can be considered professionally experienced to include reference into the A general case. and no other reasonable hypothesis explains these evidences as well
Clinical diagnosis:	the case we are studying, with the B ₁ , B ₂ , ... B _n evidences, constitutes a particular case of the general case A

Pay attention: the abduction is not a valid syllogism; it concerns a possible example of a general case or of a rule, whose actual pertinence to this general case or this rule is mediated by the professional or expert assumptions.

³ Among the rich production of John Dewey we exemplify [8–10]. All these works are public dominium in the Web.

⁴ We have been dealing with pedagogical Neopragmatism since the 1990s, see [11, 12]. It is a research that continues through the developments of Pedagogy as a social profession.

⁵ A good comprehensive treatise in Italian language is [13].

Someone speaks of gambling and of guessing, and instead it is the maximum exaltation of professionalism and, ultimately, of human mediation, of the anthropological principle.

It is suitable to increase our knowledge, to advance new hypotheses, and make predictions, which can find their substance in the past experiences, particularly thanks to some professional skills. But it is also the operative way of reasoning to be more subject to the risk of error. It, like the induction, doesn't contain its logical validity in itself; therefore it must be assessed through empirical tests, the previous mentioned *future experience*, following a fundamental thought (or principle) of the classical Pragmatism.

Abduction with diagnosis and choice of the general case is an important type of decision; if it is expressed, the translation of the previous table in terms of decision-making is immediate and clearly evident. It is essential in any case the mediation of the professional with his experience and his competence, which, more generally, is a reference to the value of the anthropological principle; reality is knowable, diagnosable, and decidable because there is man.

Given that factories of certainty and finality do not exist and cannot exist in human affairs, we observe that this is certainly a risk, but an inevitable risk, calculated and not arbitrary. The essential is the professional meditation, which is the human factor.

Knowledge	the general decision A is indicated for the phenomenology B ₁ , B ₂ , ... B _n , ...
Data	the evidences B ₁ , B ₂ , ... B _n , ...! of a particular case repeat aspects that can be considered professionally experienced to include reference into the A general case, and no other reasonable hypothesis explains these evidences as well
Clinical decision	in the case we are studying, the B ₁ , B ₂ , ... B _n , ... evidences, constitutes a particular case of A

5. Decision-making, *Logik der Forschung*, professional pedagogy, open society, coexistence, and civil and democratic society

We can understand from the pedagogical professional approach that we are following the problem of decision-making, having given the essential importance to methodology, that there is a huge common domain for the natural sciences and for the humanities, both being absolutely analogous in method.

These are speeches that still face heavy resistance in contexts like the Italian one, where for a long time philosophy has imposed a tyrannical power, claiming to judge, devaluate, upset, and hierarchize other knowledges.

In the background, we come to identify the closed dualism between positivism and idealism. It is a nineteenth-century philosophical railway that cannot be resolved, but with respect to which it is necessary to place oneself decidedly and unconditionally outside.

It is particularly suitable for our purposes what has been done since the nineteenth century by the American Pragmatism, while the Positivism-Idealism dualism was European; and, in the twentieth century, from Epistemology and in particular

from Karl R. Popper (1902–1994) who built his “Logik der Forschung” precisely starting from the critique of Logical Neopositivism and any form of cognitive inductivism.

Logic induction is not just an obsolete theory, but also it does not exist. This, since it is not possible from a number how much high of positive data, how much it can be desired, to infer actually the universal quantifier “always”, “for every A of a certain domain”. We must recall that the logical form of scientific laws is indeed a universal implication in a domain, i.e. “for every A in a certain domain, if A then B”. Well, we cannot generalize even if we have observed or detected many Bn referring to A and without exception.

But there is not even an inductive decision making process: the experiences and facts, always provided they are numerous and consistent, are rather a requirement that the decision maker, the diagnostician, the pedagogist, the designer, the teacher must possess as a professional experience, but this abduction, the professional decision, remains only “corroborated”, possible and valid until proven otherwise. The decision is a hypothesis built by man to try to solve human problems; the answers to the questions “what do you do when you have raised a problem” and “what do you do when you have to make a decision” are not “you solve it” and “you take it” but “you make an attempt of decision or solution”; a well-founded example of possible decision and solution is devised on the basis of one’s own professionalism and experience, without ever being able to be certain.

At this point, there is often an answer that exemplifies dual reasoning, the simplest and most trivial one, that of younger children, that of people not at the forefront of civilization, and also that of all digital tools, which are notoriously stupid and yet have the advantage of speed and huge data processing.

Among those who emphasize the nonexistence of the inductive method, it is indeed easy to find someone whose reasoning skills are limited to dualism, which replies by proposing the use of the deductive method, as if it were the only alternative available. If we cannot proceed inductively, can we proceed deductively? Finally, if abduction is not a tautology, the modus ponens is an immediately intuitive tautology, and it is quite obvious: “if A, and A implies B, then B.”

The fundamental argument is that in human affairs, that is, in everything we are dealing with in this chapter, we have no way of establishing the truth of an A which is its own, and the deductive method, however appealing it may be, has no applicability.

We can explain it more clearly: the truth of the deductions has as a necessary condition the a priori condition of the premises. We can proceed “as if” the premises were true, and as long as the deductions work, we can also benefit. But A may be false as it is believed to be true, and we should be fully aware of it if we make decisions by deduction.

In Italy exists a τόπος *la matematica non è un’opinione*, translated as more or less “mathematics is not an opinion.” It is absolute dogmatism, or trust, in the deductive and axiomatic method even among those who ignore what is the axiomatic of numbers or of sets theory and perhaps have a vague idea of a single axiomatic geometry, that is, that Euclidean one. The scientific ignorance, a serious responsibility of the philosophical neo-idealist tyranny in Italy mentioned above, also leads to this.

And yet, any nonintuitive but axiomatic mathematical theory is true as long as this or that system of axioms is assumed to be true: Euclidean geometry in particular had a critical point in the last of its five axioms, and indeed replacing it with alternative axioms created various families of “non-Euclidean” geometries. We could also exemplify with logic or set theory; the negative conclusion remains: it is not true that mathematics is not an opinion.

Two and a half millennia after Socrates and after so much classical, Latin, and medieval philosophies, we can affirm that we do not only need any ἀλιεῖα, in

human things such as natural and social sciences, or technique, but also philosophy, literature, and figurative arts.

Which takes the place of so many unthinkable absolutisms is the idea of a continuous research, without end or *τέλος*, with a continuous position of problems—questions—alternatives—decision-making moments and so on, the practice of human creativity to face them with products that are always fallible both in terms of internal consistency or logic and in terms of empirical testing, what Pragmatists called “the future experience.”

The result is the image of an open society, which values experience to the extent that it is part of a very specific professional competence practiced and applied in the interests of all. Nothing is true, everything is questionable. Human history, neither the macrostoria nor the mycristorias of each of us, doesn't have and cannot have a direction; there is no progress if not local and partial; rather history, in all senses, has a verse, that of increasing entropy that of the arrow of time, that of cultural evolution, and that for which one cannot retrace in the opposite direction what one has already traveled. And it is not even possible to stop.

Let us take a look at a historical background already made, after the transformations at the end of the eighteenth century that constituted a transition from an historical epoch (the modern era) to the following that still does not have its own historiographically consolidated name. Well, in 1814/1815 Der Wiener Kongress represented an illusion and a pathetic operation that would have tended to make the hands of history go back or at least stop the evolution of new ideas. It is well seen: the illusion would have lasted a few decades.

Be careful, we talk about “evolution” and not about “progress”; the Latin etymology is illuminating. The term “progress” derives from the Latin *progredior*, that is, to go forward: it is a matter of believing that humanity gives rise to a history that is like a linear proceeding with a prevalence of improvements. We rather use the term “evolution,” from *e*—from and *olveo*—I turn away, just in the sense that there is no direction and in the sense that there is no turning back.

6. Karl R. Popper: *Logik der Forschung* and open society

Popper's (1902–1994) first proposal concerned epistemology [20]. This proposal of philosophy of science, which he himself preferred to call *Logik der Forschung* just as from the title of his fundamental work. The “scientific” booklet was added only with the English edition of its fundamental work [20]. In the middle there where the Second World War and the first postwar period with the Cold War.

His vision of science is known as critical rationalism, or fallibilism, although the first to speak of fallibility was Charles S. Peirce (1839–1914) [18], the scholar of logic among the founders of Pragmatism.

His proposal in the political field [21, 22], the open society theory, was known later, even if in Italy it was known previously.

In order for a society can be defined strictly “open,” the fundamental and unavoidable condition is not who should govern, but that government practice is controlled by the sovereign people: controlled in itinere, with the social tools of today's information, which suggest the pedagogical importance of the public speaking in the ancient Greece and, in imperial Rome, Marcus Fabius Quintilianus (35–96) and *Institutio oratoria* (70–90 about); and above all by the time the decision returns to the same sovereign people, who can confirm the ruler or revoke it and replace it with another, without this handing over involves any problem or any violent and bloody implication.

In summary, we derive the teaching that decision-making must go hand in hand with general and intersubjective controllability, without privileged controllers being possible or even conceivable.

7. The scientific contribution of Umberto Eco: a semiologist novelist

Umberto Eco (1932–2016) is internationally known to the general public first of all as a writer, as a novelist. But he is even better known among the experts as a semiologist, as a scientist of signs, from the fundamental *Opera aperta* [23]. The title's locution indicates a work that includes several readings, which allows multiple interpretations, and in the most important part of his university career, he completed in the faculties of architecture (of Florence and Milan).

Umberto Eco wrote in his most famous narrative work (a novel) *Il nome della rosa* (Bompiani, Milan (1980)), discussing of solving a mystery which for us is a very general way of understanding the diagnosis, the formulation of a scientific law, the decision-making, and the hypothesis of a solution in a single phrase of a problem.

The narrator is the elderly monk Adso von Melk, who tells an extremely involving story of when he was a young novice, a student of the expert and critic William of Baskerville, Franciscan monk on the occasion among the Benedictines.

The whole book focuses on a complex of mysteries and deaths, so it allows us to extend our methodological analogy to detection, which also involves a complex of decisions, in particular on the causes and the colas of events.

William tries to explain to Adso in simple terms the methodology to be followed: *“risolvere un mistero non è la stessa cosa che dedurre da principi primi.*

*E non equivale neppure a raccogliere tanti dati particolari per poi inferirne una legge generale. Significa piuttosto trovarsi di fronte a uno, o due, o tre dati particolari che apparentemente non hanno nulla in comune, e cercare di immaginare se possano essere tanti casi di una legge generale che non conosci ancora, e che forse non è mai stata enunciata.”*⁶

The discourse has a complex articulation opposed to the deduction from the first philosophical principles. They are assumed, precisely, as if they were unquestionably true for theological reasons and for this reason susceptible of deduction that produces certainties.

William is cautious, hypothetical, inspired by a genuine benefit of the doubt: *“Onestamente, io non so se le ragioni che ha trovato siano quelle buone, né ho mai controllato [...] la ricerca delle leggi esplicative, nei fatti naturali, procede in modo tortuoso. Di fronte ad alcuni fatti inspiegabili tu devi provare a immaginare molte leggi generali, di cui non vedi ancora la connessione coi fatti di cui ti occupi: e di colpo, nella connessione improvvisa di un risultato, un caso e una legge, ti si profila un ragionamento che ti pare più convincente degli altri. Provi ad applicarlo a tutti i casi simili, a usarlo per trarne previsioni, e scopri che avevi indovinato. Ma sino alla fine non saprai mai quali predicati introdurre nel tuo ragionamento e quali lasciar cadere. E così faccio ora io. Allineo tanti elementi sconnessi e fingo delle ipotesi. Ma ne devo fingere molte, e numerose sono quelle così assurde che mi vergognerei di dirtele. [...] Vinsi, ma avrei anche potuto perdere. Gli altri mi hanno creduto saggio perché ho vinto, ma non conoscevano i molti casi in cui sono stato stolto perché ho perso [...] Ora, sui casi dell'abbazia, ho molte belle ipotesi, ma non c'è nessun fatto evidente che mi permetta di dire quale sia la migliore. E allora, per non apparire*

⁶ *“solving a mystery is not the same as deducting from first principles. Nor does it amount simply to collecting a number of particular data from which to infer a general law. It means, rather, facing one or two or three particulars data apparently with nothing in common, and trying to imagine whether they could represent so many instances of a general law you don't yet know, and which perhaps has never been proposed.”* [24].

sciocco dopo, rinuncio ad apparire astuto ora. Lasciami ancora pensare, sino a domani, almeno.”⁷

In fact, it is a novel for its developments. The anticipation of the *Hypotheses non fingo* formula by Isaac Newton (1642–1727) in a novel set at the beginning of the fourteenth century would be excellent, but in the English translation in our opinion is not put in proper evidence.

The pupil and novice Adso, narrator of the novel in old age, reports his reflections: “*Capii in quel momento quale fosse il modo di ragionare del mio maestro, e mi parve assai difforme da quello del filosofo che ragiona sui principi primi, così che il suo intelletto assume quasi i modi dell’intelletto divino. Capii che, quando non aveva una risposta, Guglielmo se ne proponeva molte e diversissime tra loro. Rimasi perplesso.*”

“E voi,” dissi con infantile impertinenza, “non commettete mai errori?”

“Spesso” rispose, “Ma invece di concepirne uno solo ne immagino molti, così non divento schiavo di nessuno.”

Ebbi l’impressione che Guglielmo non fosse affatto interessato alla verità, che altro non è che l’adeguazione tra la cosa e l’intelletto. Egli invece si divertiva a immaginare quanti più possibili fosse possibile.

*In quel momento, lo confesso, disperai del mio maestro e mi sorpresi a pensare: “Meno male che è arrivata l’inquisizione.” Parteggiai per la sete di verità.”*⁸

The young Adso, perhaps even as an old man, seeks the truth by describing it with the philosophical phrase *Adaequatio rei et intellectus* which was expressed a few years before the story told by Thomas Aquinas (1225–1274) based on previous sentences of Avicenna (980–1037) and before that by Isaac Israeli ben Solomon,

⁷ “Honestly, I do not know whether his conclusions are the right ones [...]. I was trying to tell you that the search for explicative laws in natural facts proceeds in a tortuous fashion. In the face of some inexplicable facts you must try to imagine many general laws, whose connection with your facts escapes you. Then suddenly, in the unexpected connection of a result, a specific situation, and one of those laws, you perceive a line of reasoning that seems more convincing than the others. You try applying it to all similar cases, to use it for making predictions, and you discover that your intuition was right. But until you reach the end you will never know which predicates to introduce into your reasoning and which to omit. And this is what I am doing now. I line up so many disjointed elements and I venture some hypotheses. I have to venture many, and many of them are so absurd that I would be ashamed to tell them to you. [...] Now, for the events of the abbey I have many fine hypotheses, but there is no evident fact that allows me to say which is best. So, rather than appear foolish afterward, I renounce seeming clever now. Let me think no more, until tomorrow at least.” [24].

⁸ I understood at that moment my master’s method of reasoning, and it seemed to me quite alien to that of the philosopher, who reasons by first principles, so that his intellect almost assumes the ways of the divine intellect. I understood that, when he didn’t have an answer, William proposed many to himself, very different one from another. I remained puzzled.

“But then ...” I venture to remark, “you are still far from the solution. ...”

“I am very close to one,” William said, “but I don’t know which.”

“Therefore you don’t have a single answer to your questions?” [...]

I had the impression that William was not at all interested in the truth, which is nothing but the adjustment between the thing and the intellect. On the contrary, he amused himself by imagining how many possibilities were possible.

At that moment, I confess, I despaired of my master and caught myself thinking, “Good thing the inquisitor has come. Was on the side of that thirst for truth”, [25].

(855–955) which referred to the correspondence between reality and its linguistic and conceptual representation.

The indicated methodology is the way through which to carry out this passage: this is the meaning of the Greek-classical locution μέθοδος (μετά through, in search of, in the direction of; and ὁδός, road, itinerary).

Abduction, or retro-duction, is neither positivistic and empiricist inductivism nor idealism with the postulations of some a priori truth.

It is significant that the inspiring master and philosopher of the protagonist, Brother William of Baskerville, acute inquiring and investigator, is Roger Bacon, Doctor Mirabilis (1214– about 1294), also a Franciscan friar, an empiricist thinker, and precursor of the science of the modern age.

8. No progress, no direction in history, and no increase in verisimilitude in scientific research, in society, and in decision-making

The renunciation of speaking of truth in human affairs, such as those in this chapter, has left the conditions for a very particular conception of progress, at least in the Popper of fundamental works, and for about 50 years.

In a science devoid of truth and always falsifiable, it was believed to identify a criterion of progress in verisimilitude, in the sense that a theory was to be considered progressive with respect to the previous one in that it was able to explain the same phenomenology and explained it further. In extreme synthesis, one would never have truth, but a little more truth, or an approach to the truth, or a greater similarity to some image of truth.

But it was Popper [26–29] who admitted his mistake to the very brief expiry of the knowledge of the now well-known theorem of Pavel Tichý^{9,10} [32].

All this is equally true for decision-making. The overall pragmatist methodological framework from the nineteenth century and then epistemological and neopragmatist in the twentieth century has kept its function perfectly and to this day has no alternative.

In fact, one should easily guess that it makes no sense to talk about approaching the truth or bringing about verisimilitude, where truth has also been renounced as a conceptual tool, and in any case the renunciation remains, at most the truth can become an ideal trend, which could therefore not even exist.

A little more complex is understanding the substance of Pavel Tichý's message: more or less in a theory that cannot be said to be true, one cannot add truth without thereby adding falsehood, and vice versa one cannot remove falsehood without thereby even take away the truth. It is less difficult to guess than to formalize. Are we willing to take this into account in decision-making?

Among the epistemologists/philosophers of science/logics of research and also among the historians of Popperian matrix, an orientation was expressed for a vision of science on a journey through a particular type of utilitarianism; the evolution of science is progressive as it allows ever greater applications and benefits for man and mankind. This shifts the problem to utility criteria: there are achievements of science that improve some aspects of life and make it worse than others or that improve life for some and not for others, and so on.

For a philosopher, even a philosopher of science, it is certainly a heavy withdrawal to resort to instrumentalism where science was affirmed as a form of

⁹ On Popper's definition of verisimilitude [30].

¹⁰ Verisimilitude redefined [31].

essential knowledge; it is not so for pedagogy, so much so that Dewey's pedagogical theory, which is the most substantial part of pedagogical Pragmatism, was called instrumentalism. For us pedagogists the only essence is the man: all the rest, starting with education and pedagogy, are tools for man and humanity.

From a narrow epistemological point of view, it should be added that rather than talking about truth in any way in the research process, we should talk about reality or the phenomenology of reality. Perhaps to some extent, the scientific research in its historical evolutionary course is approaching: the phenomenology of the real, its prediction, its understanding, and an interaction that can be more functional to humanity. But it is not even said that this is so. This is just another hypothesis; if we prefer it is a meta-hypothesis.

9. The person and the clinical eye

In decision-making, as in pedagogy, the concept of the person avoids this complex of difficulties, confusion, and lack of solutions and answers. It is all the more clear that pedagogical help lends itself to the person, even for his being part of a couple, a family, a partnership, a service, and any social aggregation, and if we speak of "helping the family" or "helping a sports team," we use a synecdoche, a rhetorical figure consisting in talking about a part talking about the whole. We still deal with a social subject, part of the society in its instances, precisely the person always.

The discourse on decision-making can be different, sometimes concerning the person and sometimes not: think of the example of a sports team, which is much more than the sum of the people (players), or of a professional team. However, the sports team or the professional team builds up to common aims and objectives, that is to say to common personal expressions; the decision will be taken by the most expert, the manager, the coach, and so on, for abduction, starting right from the people making up the group and taking into account exactly how much of the group the team allows to realize: over-personal, but essentially personal in nature. The person, unlike the individual of a statistical sample, has his own values, his own sense of life, his own interpersonal communication network, and his own political essence. The decision is constructed precisely considering, in addition to the individuals, these expressions as they become common in the constitution and in the functioning of the group.

On the other hand, having said that empirical induction does not exist and that decision-making abduction is based on the data and evidence that the expert gathers in the group members, it is understood that this survey cannot be general but selective, highly selective and guided by the observer's competence. It is a matter of generalizing and also of the decision-making discourse that the concept of "clinical eye" should not be considered reduced to the only category of surgeons or similar professions. At the base of a good decision of the trainer, the coach, the manager, and the team leader (etc.) is his clinical eye on the evidence of the components to be detected and reworked, an essential part of his professionalism.

Also in other sectors, not only in medicine surgery and in professional pedagogy, the clinical eye is a reasoning eye, and that is the essential premise for the maturation of experience, part of professionalism and leadership.

Who decides can also give the impression of seeking the decision within himself, and in some respects it is so. But an essential premise is a lot of experience on the evidence in the decision field and on the situation in which the decision is required, which must presuppose the clinical eye in the decision-maker.

There is a further reflection to be made between the consequences of Tichý's theorem and the decision by anyone with responsibility for a group, a social reality, a team, an *équipe*, a department, an association, and so on. Stripped of the pretense of having some truth or of being able to conquer it or even approach it, and carefully considering the conceptuality of the person and of the clinical eye, we see that acting on the person is not and should not be considered a limitation as it does not treat his subjects as individuals or elements. This is what gives meaning to his professionalism in the clinical eye, and that fully (or more possible) enhances the group of people being something more and different than the sum of the characters of the individuals of a sample.

Deciding on people is more consequential and different than deciding on individuals.

10. Decisions that cannot admit explicit systematic doubt and must deny fallibility

In summary, from the professional pedagogy comes an indication that crosses the natural sciences, the human and social sciences if and as they are sciences such as the latter and the first, civil and democratic coexistence, and other sectors of the humanities. The decision, sometimes a solution to a problem, sometimes a law or scientific theory or an idiographic description, is always and in any case a hypothesis created by man in an attempt to solve human problems, subject to the laws of logical coherence and above all of fallibility. The systematic doubt should never be lacking; the knowledge involved cannot be considered "strong knowledge," but on the contrary it is weak knowledge, indeed very weak, which owes precisely to their weakness, their ability to evolve and their transferability from one person to another one.

We have seen various implications of this vision, not without mentioning possible misunderstandings deriving from the legacy of the philosophical nineteenth century, of European philosophy polarized between positivism and idealism. This is all the more evident when we consider the professional aspects of these human and cultural sciences, as well as of course of the natural sciences.

All this does not detract from the human need, which is anything but infrequent, to come up with well-defined decisions that leave no room for doubt, which bring with them certainty and decision-making. Among the *théories pratiques*, Durkheim exemplified medicine, politics, strategy [33], and even, scattered in his works, other sciences, techniques, and human professions.

Well, can a surgeon decide for an operation that presents certain risks or not to carry out an operation that presents other certain risks, simultaneously with all those reserves of hypotheticality, doubt, fallibility, and the others that we have illustrated up to here? Can a military commander give the order to attack or retreat with similar clarifications? Could a politician do it in the performance of his duties? In this case we might also think that it should be done more frequently and with more conviction than it actually is, but the problem is that a decision that must be made without any methodological superstructure imposes itself, in politics, almost always. What about the designer of a civil artifact that must rule on its security and on the manufacturer of a drug that must guarantee that the benefits of the administration, given certain conditions and observed certain warnings, are preferable to non-intake? Even the judge, who is a man who professionally sentences about other men on human problems, and who can impose penalties that in some countries reach the death penalty even in our own time, pronounces "beyond every reasonable doubt," when the only reasonable reality of doubt and its irrepressibility anyway?

Without going into the specifics of each of these and the other innumerable examples that we could bring, it is clear that we are dealing always with decisions consisting of hypotheses created by man, fallible and questionable, about which we always and in any case doubt. The suppression, or suspension, of these and all the other warnings, which for those who have a minimum scientific culture are purely formal and will never be substantial in any case, can indicate the need to corroborate the decision-hypothesis in the most humanly way as possible, performing cross-checks, involving different points of view and skills, and bringing together different human, scientific, social, and political positions as such. We can try to reduce the risk of error to the minimum, as much as humanly and socially possible: but infallibility will never be possible in any human thing.

Anymore, the reflections and considerations that we could make on this subject are many, and so far we have remained to the exemplification. But the problem of the need for certainties, around decisions which, being hypotheses and human creations, cannot but be fallible, is in substance unsolved.

11. Toward some conclusions

Ending the chapter, we understand how and why it is not possible to operate some form of “conclusion,” since our whole discussion is centered on an institutionally open and unlimited discourse, without end or *έλος*, in continuous evolution (and not in progress!). It is always a questionable discourse on a social level and on a level political in a broad sense, the heritage of everyone as it is transmissible intersubjectively like any theory, law and scientific evidence and as it is not personal opinions, ideologies, faiths, philosophical theories, and so on, listing what is not it has been the subject of our discussion if not “to complementary.”

Curiously, in the Italian language the adjective *discutibile* (questionable) has a fundamentally negative use, tending to devalue what it is applied to. Instead, we will understand that questionability is an invaluable value of a pedagogical discourse, and human in general, as it brings openness, evolution, culture, sociality, and much of what man needs, even or before all in terms of decisions.

Then there is everything that is not considered questionable, but it can only be the object of a personal adhesion. Indeed, as the contemporary Pedagogy warns us, we must stigmatize any attempt to enslave other human persons to, or under, beliefs considered infallible, certain, definitive, dogmatic, ideological. They are all behaviors humanly incongruous. Often such attempts are cloaked in disguise, making one believe that the imposition of an ideology is made “for the good” of the recipient, or of a social class, or of the whole society. This is not the case, and no one must fall into the trap of discussing the goal: man is never a tool to extrinsic ends; he will always be only a purpose in itself.

As such, each human person has every right to make his own decisions or to assume from those who believe the decisions he needs, facing fallibility, doubt, uncertainty, and the limits of human creativity, but also the openness, evolution, the possibility to correct oneself, and so on.

This, in essence, is the lesson of professional pedagogy for just under two centuries. We do not educate despite our limitations but precisely because we have limits and tend to go further, as a sort of personal ethics. Our limits, recognized for such and made the basis of the educational act and pedagogical professional practice, are the highest expression of our love for man and for humanity and of our dedication to those entrusted to our education and our professional pedagogical intervention.

12. Possible overall conclusions

Empirical induction does not exist, as Karl Popper imply demonstrated by placing this critique as the foundation of his *Logik der Forschung*.

The logical deduction is a correct and tautological procedure, but it poses the problem of validating the system of premises, with the current risk of an infinite regression, and also poses the problems of what logic applies, of how inferences are operated.

For the decision in every field, for the medical-surgical diagnosis or for the pedagogical diagnosis, for the proposal and development of laws and theories in nomothetic sciences (both natural sciences and human, social, and culture sciences), and for any human act of choice and determination, even in the economic world and in the world of the work or of business, an alternative exists in Western culture, an alternative which has its roots in classical Greece and which had its strict formalization in the nineteenth century at the Pragmatism of Charles S. Peirce.

These are acts of practice of human creativity in an attempt to resolve certain human problems, in which the passage is from the particular to the general, from evidences or data to the general case, and is operated by the necessary mediation of the qualified, trained professional and expert; logically it is not a tautology, i.e., a true formula, fallibility characterizes the decision as in any case the scientific and technical research, and any human act. The name of this procedure is abductio or retroductio.

The discourse, among other things, centered on the necessary human mediation and on the irrepressibility of the expert man's intervention in confronting impersonal procedures such as both empirical induction and logical deduction, constitutes a way of putting the right emphasis on the anthropological principle.

Nach diesem Sinn, and in the context we have outlined, we can well conclude with the Sophist Protagoras from Abdera (ca. 490-420 BC): “Πάντων χρημάτων μέτρον ἐστὶν ἄνθρωπος, τῶν μὲν ὄντων ὡς ἐστὶν, τῶν δὲ μὴ ὄντων ὡς οὐκ ἐστὶν πάντων χρημάτων μέτρον ἐστὶν ἄνθρωπος, τὸν μὲν ὄντων ὡς ἔστιν, τὸν δὲ οὐκ ὄντων ὡς οὐκ ἔστιν”.¹¹

¹¹ Man is the measure of all things, of those that are as they are and of those that are not because they are not.

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