

## **DIGITAL\_EDU\_FORUM-IV: Emergency Remote Interdisciplinary Science Teaching in the days of Pandemia**

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### **The paradigm of the inevitability of progress-a short conceptual sequence**

**Accepting the challenge to relaunch our professional vocations with resilience:  
transforming the terrible pandemia into an opportunity for growth**

I found Maria Kalathaki's invitation to this Forum very interesting and, although I was very busy in this period, I decided to participate anyway, contributing with a **short conceptual sequence** that I offer to your attention, aware of how summary it is and not entirely focused on the specific purposes of the Forum.

First of all I want to underline how the **title of the Forum** is already capable of diagnosing the extreme complexity of the historical phase that we have been given to live, a complexity that is largely difficult to decipher for its enormous and dramatic implications.

In fact, I identify **six key words** in the title that perfectly identify the existential and professional condition of every human in the time of pandemia. First of all, **Emergency**, the exceptional condition in which we suddenly fell, a collective state of mind that suddenly shatters **the paradigm of the inevitability of progress**, plunging us into a sort of Middle Ages in which we return - as in the time when Thucydides described the pestilence in Athens, or the Florentine one described by Boccaccio, or the Milanese one documented by Manzoni ... - to be at the mercy of an incurable plague, apparently without science being able to face the devastating emergency.

**Epistemologists** - who notoriously study the 'episteme', the certain and incontrovertible '**demonstrative knowledge**' of the causes and effects of

becoming, the knowledge that is established on certain foundations, beyond any possibility of doubt about the reasons of events - had been keeping an eye on this **paradigmatic crisis** for a long time.

There is a path that goes from **Karl Raimund Popper's 'falsificationism'**, his rejection and **criticism of 'induction'**, the proposal of falsifiability as a criterion of demarcation between science and non-science, to the **post-Popperian epistemologies**, really fundamental in the panorama of **the 'crisis of contemporary rationality'**.

Alternative to Popperian falsificationism is **Thomas Samuel Kuhn's** famous work, **'The structure of scientific revolutions'** (1962), in which he argues that scientific progress is not an accumulation of knowledge aimed at discovering the truth, but an **alternation between 'normal science' and 'scientific revolutions'** characterized by **'paradigm shifts'**. The term "paradigma" refers to the set of theories, laws and tools that define a 'research tradition', in which theories are universally accepted and the expression 'normal science' refers to the routine work of scientists following a dominant paradigm. Throughout history, scientific revolutions have produced **changes in dominant paradigms** (geocentrism / heliocentrism, the fundamental one). The criterion with which a paradigm is victorious over the others consists in its persuasive power and in the degree of consensus within the scientific community.

**Imre Lakatos**, philosopher of mathematical and scientific thought (Hungarian by origin, a pupil of Popper and his successor at the London School of Economics) offered to the philosophy of science a very interesting attempt to **resolve the conflict that had arisen between Popper's falsificationism and Kuhn's scientific studies** on the theory of paradigms. Popper's theory implies, in fact, that scientists must abandon a theory as soon as evidence is found that falsifies it, immediately replacing it with **new, more 'bold and effective' hypotheses**. According to Kuhn, however, science consists of 'periods of normality', during which scientists continue to support their theories while detecting anomalies within the dominant paradigm, interspersed with periods of great conceptual change, precisely the **'scientific revolutions'**, which gradually produce the structuring of a new paradigm.

**Lakatos** tries to harmonize these points of view by developing the thesis of the *'fallibility of mathematics'* and its methodology based on *'proofs and refutations'* relating to the phases of preaxiomatic development. Influenced by critical rationalism and Popperian falsificationism, Lakatos attempted an application of it to the **history and philosophy of mathematics** (Proofs and refutations, 1963-64; trans. It. 1979), in whose field he dealt in particular with the **logic of mathematical discovery**, to which he dedicated his doctoral dissertation. He subsequently worked on a **sophisticated methodological falsificationism**, elaborating the famous theory of *'research programs'*, conceived as consisting of a succession of theories that develop from a central **nucleus (hard-core)** which, for methodological decision, is considered **not falsifiable**, but also from a protective belt, from a set of auxiliary theories that have the task of protecting the central nucleus: in the history of science, a theory is discarded not when some 'fact' contrasts with it, but **when the scientific community has a better, more effective theory** (Newton's mechanics, albeit affected by several anomalies, was rejected only after Einstein's theory was proposed).

**Paul Karl Feyerabend**, philosopher of science and sociologist, represents the result of the fruitful, innovative work of this wonderful generation of **contemporary epistemologists**, immediately becoming famous for his *'anarchic' vision of science* and his **denial of the existence of universal methodological rules**. His work has had considerable importance in the history of the philosophy of science and the sociology of scientific knowledge. Already the titles of his main works (**Against method**, Science in a free society, **Farewell to Reason**) identify his position as a critical point of view on science, which led him to be described as *'anarchist' or 'Dadaist'*, for his **rejection of the dogmatic use of rules**, a position incompatible with contemporary rationalistic culture in the philosophy of science.

*'Against method'*, the work that Feyerabend had planned to write with Lakatos (together they had designed an essay in the form of a dialogue, according to the canons of classical philosophy, in which **Lakatos would defend a rationalist vision of science while Feyerabend would attack it**, but, sadly, Lakatos died suddenly in 1974 and Feyerabend wrote his essay by himself) immediately constituted a famous critique of current views in philosophy of science, provoking **many reactions to the direct and fiery language** he liked to use. Indeed, in his writings, there is **passion and energy** unmatched by other philosophers of science and this came at a high cost to him, as he reveals in his

autobiography, when he cites, in the initial comments to 'Against Method' in 1975, overwhelmingly negative, which caused him to fall in a deep **depression**.

His works had however a **resounding success** all over the world, in which Feyerabend defended the idea that there **are no methodological rules** always applied by scientists, that **any type of prescriptive scientific method** would **have limited the activity of scientists** and, consequently, **scientific progress**. Science, for him, would benefit more tending towards '*epistemological anarchism*', also convinced that '**theoretical anarchism**' is more **humanitarian** than other systems, not imposing rigid rules on scientists.

In Philosophy of Science, **Feyerabend's position is generally considered extreme**, because he argues that philosophy cannot provide a general description of science, **nor devise a method for differentiating the products of science from non-scientific entities, such as myths**. To support the idea that **methodological rules usually do not contribute to scientific success**, Feyerabend provided counterexamples to the assertion that 'good' science operates according to an established method; gave, as an example some scientific episodes, generally seen as indisputable cases of progress (for example the Copernican revolution) and showed how, for them, **all the prescriptive rules of science had been violated**, underlining how **the application of prescriptive rules**, in those historical situations , **would actually have prevented the scientific revolution**.

As often happens to me, unfortunately **I got lost in the maze of the beautiful solicitations offered by the theme of this Forum ...** but now is time to return to the **key words** contained in the title of your invitation '**Emergency Remote Interdisciplinary Science Teaching in the days of Pandemia**' , the first, '*emergency*', directly connected to the concept of '**Pandemia**' stimulated in me this long epistemological digression.

The other four key words: '**Remote Interdisciplinary Science Teaching**' instead take us directly **into the docimological universe that constitutes the ground of this Forum**, where I find so interesting to have grasped and totally **accepted the challenge** launched to all of us by this **terrible pandemia** and the emergency condition in which it has plunged us. The challenge, I mean, of

wanting to draw precisely from the **condition of weakness, of desperation of the present time**, the strength, the stimulus, the energy to relaunch, to want to **draw from the abyss the push not to be defeated**, not to flow back. In short, right in the time of the pandemic, an opportunity arises here, from the impossibility of teaching face to face, **to build Remote Scientific Teaching models ... moreover innovative in an Interdisciplinary way!** My compliments!

I believe that **this group of participant in the forum is culturally, scientifically and didactically well equipped** to fully explore this very topical issue: I leave therefore the floor to you ! I want, however, to add a **short pattern to testify to you how this pandemic has overwhelmed**, like everything and everyone, **even my life, as an intellectual of the Italian province**, happily retired, culturally committed, very intent on planning and realizing, finally tourist trips, after so many years of travel for work Erasmus ...

The explosion of the pandemic caught me in February, actually traveling (my ever desired existential dimension ! ). **I was in Prague, invited to hold**, at the **Cultural Institute of the Embassy of Italy**, the conference - presentation of a precious tome '**The Marmore Waterfall in Ancient and Modern Graphic Work - Engravings and prints from the 17th to the 19th century** ' by an illustrious researcher B. Vescarelli, recently published in Terni. A work with a strong **interdisciplinary character** (history, history of art, multiple technical knowledge, literature, classical and modern languages ... that interact within the analyzes involved in the individual **ancient tables** presented) with profitable **didactic implications**, a truly exciting cultural experience. During my stay in Prague I was psychologically overwhelmed by the first restrictions imposed by the emergency about to shoot in Italy (we in Italy were the first in Europe ...) and I immediately felt I had to live that experience to the full, grasping its extraordinary nature.... And the great success obtained with the **refined Prague public confirmed** my belief that, **in difficulties, is necessary to relaunch, raise the bar, throw the heart over the obstacle, in a scientific as well as an existential sense.**

As soon as I returned to Italy, I found the **lockdown imminent** and, therefore, the consequent sense of disorientation. For us Italians, in the incipient spring,

closing up at home, reducing even family contacts, losing all friends, having to give up shaking hands, hugging each other, eating together, chatting, singing together, going to the cinema together , at the theater .... terrible! Really me, philosopher by training and not at all versed in digital, who persuaded a small **group of friends**, many of them engineers, to immediately download an easy communication platform (**ZOOM**) to **compensate the communication deprivation**. In the afternoon at 18.00, everyone on the net chatting pleasantly about the **pandemia, about economics** ( upset by the impact of the pandemic ...), about **politics** ( in Italy, politics is always a terrifying topic...). From this daily experience of **web conferencing**, I got the feeling that **this mode of interaction was able to satisfy my emotional, relational, cultural expectations**. I know that what I am about to tell will seem **strange, questionable, even dangerous**, but I cannot remain silent about the feeling of communicative 'fullness' that those daily friendly conversations have left me. **The technological means, the remote close-ups, the voices to be disciplined... it seemed to me that they even managed to better focus our emotions, opinions, feelings**. I think we were all more attentive, more focused, less digressing, more authentic. **I submit to your attention this my risky thesis on the Psychology and Sociology of communication, ready to receive all the opportune criticisms**.

In the meantime, a group of **young artists** proposed me to **join their working group** (again through the **ZOOM platform**) really interesting because **multidisciplinary, intergenerational, informative** ... aimed at launching a **contest on the web**, whose construction and management of the **dedicated website** involved a series of **methodological and technical analyzes related to digital knowledge**. The interdisciplinary preparatory work was aimed at encouraging a *contest on the web* to encourage enthusiasts in some arts mainly **youngs and the world of school**, to express themselves in the 'language' they selected, sending their productions to a website *ad hoc* created, entitled '**Behind a mask**': *"On everything, silence. The empty streets, the deserted gardens, the pain, the hope. But in homes, life pulsates more than ever, reinvents itself in a thousand forms in this uncertain time and does not give in to fear. We want to testify with photography, graphics, poetry, prose and video the will to (re) imagine a possible future and leave a trace of our emotions"*.



The apparent **decline of the contagion** has granted us the pleasure of enjoying our summer ... unaware that in a short time the situation would again precipitate in the **re-explosion of the pandemia**. Fortunately, I found myself at the center of some projects that may have already been activated, however, to be finalized between **September and this December 2020** of the relative lockdown.

A project of '**Urban Sociology and Analysis of Gender Differences in the planning of the urban structure of the city**', where I have been working on for some years with a small group of women, also **interdisciplinary** ( in the LAB\_MAP we have **architects, sociologists, city planners , philosophers, artists**) who analyzes, interdisciplinary, the relationship of women with the urban space and the city and who meets and works in the large rooms with vaulted ceilings of a beautiful seventeenth-century building in our historic center, home of the Women's House. Our **LAB\_MAP has developed a research-intervention aimed at detecting the needs expressed by the female universe**, precisely in reference to the **ability of the city to build itself to the extent of women, children and fragile subjects**. Through the construction / administration of survey tools (questionnaires, interviews, video documentation) we analyzed the evidences that emerged, acknowledging the reported needs and allowing our architects to transfer all this into a **series of interactive urban maps of the city**, really interesting, working at the same time in synergy with Italian and European universities (Milan, Turin, Vienna) and with local administrations.

The complex and articulated research found last October an opportunity for reflection and **dissemination at EU level**, when ourLAB-MAP organized a **streaming TV broadcast**

[https://m.facebook.com/story.php?story\\_fbid=10221276136364512&id=1580227587&sfnsn=scwspmo](https://m.facebook.com/story.php?story_fbid=10221276136364512&id=1580227587&sfnsn=scwspmo) during which we presented our research and a recently published essay "**La città della cura - The city of care**" by Annalisa Marinelli <https://www.ibs.it/citta-della-cura-ovvero-perche-book-annalisa-marinelli/e/9788820765736>

This TV streaming was really stimulating, since, using a complex digital platform, we were able to work remotely in synergy, me and my young architect colleague

from **Terni** (each from her home), a young PhD student connected from her **University in Paris** and the authoress of the essay, linked from her **University in Stockholm**.

A few days ago ended an **editorial project** for which I and a large group of intellectuals from my city worked hard for a few months (personally, I to the point of exhaustion!), **involving also some of the dear European colleagues** who followed me in my long career of Erasmus planning and that I have followed in many projects, still in a European dimension. In fact, **thanks to Maria Kalathaki, Zaneka Stergiani and Schoinoplokaki Evangelia, Diamandi ...** and to our other dear colleagues of a lot of EU research, I do not mention all here but who have offered their contribution of ideas to our publication, in this first phase and in the subsequent volumes of the series. just launched. A publisher friend, in fact, wanted **to build this intellectual group in Terni, asking all of us, belonging to a wide spectrum of scientific and humanistic specificities**, to put our ideational and planning capacity towards the city into play. The long work of editorial editorial staff has put in synergy different but **interacting disciplinary areas: history, art, cultural heritage, geology, development sustainability, economy, industrial policy, urban planning, anthropology, religion, astronomy, health policy ... and more .**

The first outcome of this publishing project was the drafting (just concluded with the publication) of **the first two volumes of a series** (we have been working for a few days on the conception **of the third volume** 'La nuova, aurea, immigrazione per la futura Terni', which will outline, based on the ideas already exposed in the first two volumes, our land as a polycentric territory). The first two volumes, published a few days ago, '**Terni city of gold**' have a **didactic slant** and are in themselves effective **tools for interdisciplinary teaching of the territory, offering models and teaching tools that can be transferred to other geographical contexts.**

I cannot fail to mention also a **theatrical Direction work**, which commits me, always **remotely**, with a **multidisciplinary work** group (a director, costume designer, set designer, authors, actresses, soundtrack experts ...) with whom we



are staging (via **ZOOM**) a delightful **theatrical piece**: Cristina Comencini 'Two matches'. **A path of textual analysis, historical and cultural background analysis, introspective analysis, psychology... really interesting.**

Above all, as always, the work in **European design**, to which I have totally dedicated the last decades of my life ... a work that has also become more difficult in this difficult time, but which continues to urge me in hypotheses of planning always in progress implementation (**Creative Europe, Erasmus, European Citizenship...**). In the meantime, **we have achieved success!** Stella, from **Cyprus, who had participated in some of my EU partnerships**, asked me for help, last season, in identifying a **partner in Terni to be included in an Erasmus of her school**. I had no difficulty in helping her and I had the satisfaction of knowing that this Erasmus, centered on an agri-food theme, was successful: a really **good omen** in this complex phase of our lives.