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Social Responsibility in the Academic Organisation: Bio-Techno Practice

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Abstract

Biomedicine and biotechnologies necessitate a more profound examination of the interplay between science, knowledge, and social responsibility in light of the new challenges they present. Technology appears to influence our perception of human advancement and scientific comprehension of the natural world and life in particular. In contrast, it is necessary to engage in a thoughtful examination of the philosophical underpinnings of science as a human endeavor. This raises significant concerns regarding the role of universities in the preparation of the future leaders and professionals of our society, as well as the new emerging paradigms of "excellence" in the academic, social, and market sectors. Upon a brief examination of the most recent philosophical reflections on the unity of knowledge, which is the foundation and objective of academic endeavors, we contend that the bio-techno-practice prism is a robust motivator for academic endeavors. We also explore the influence of interdisciplinary activities on the "hidden curriculum," which is the embodied style of (skills that enable) individuals to cater to the physical, social, professional, and scientific needs of others. This discussion is derived from the experience of an international project.

Key words: Education, university, research ethics, interdisciplinary research, epistemological values, public engagement, biotechno-practice

1.1 Introduction

A meeting has been recently convened by the European Commission to address emerging scientific trends. Our contribution to this special issue is particularly interested in the subject of the event: "The challenges of quality" and their impact on the trustworthiness of science in applications, policy, and as knowledge. The forum has acknowledged that the quality challenges originated from the transition from community-based "little" science to industrial-scale "big" science, which had an impact on research incentives, commitment, and morale. In an era that has been dubbed the "information age," science is a propelling force of development, influencing the development of future societies through the dissemination of scientific findings

and the adoption of technology. Conversely, the forum deliberated on the emerging concept of "governance of quality" and the necessity of transcending the excellence paradigm. In reality, "excellence" has been primarily regarded as the pinnacle of a quality hierarchy. Nevertheless, the term's usage appears to be anything but as it expands. At the European meeting, it was emphasized that the increasing policy fixation on the vague concept of "excellence" is counterproductive to endeavors to enhance the governance of science and innovation.

Transparency, responsibility, uncertainty management, sustainability, and transdisciplinarity (synthetized in the acronyms TRUST afterwards; ibidem) have been of significant importance to the European forum at the intersection of these issues. These keywords suggest a shift in our comprehension of science and its relationship with society. It is imperative that we recognize a significant cultural transition that is influencing our understanding of scientific knowledge and human progress. In this new perspective, science is not merely an abstracted truth-machine, but rather a multifaceted social, technical, and cultural endeavor that is profoundly ingrained in society and shares all of its triumphs and pathologies. Consequently, the "crucial concept" is Quality, rather than the conventional Truth (ibidem). In the subsequent pages, we will argue that quality is in fact grounded in practical truth and that researchers who are trained in this practical truth are more likely to produce high-quality work. We will refrain from engaging in a theoretical discussion of the separation or even contrast between quality, excellence, and truth.

We define practical truth as the capacity of human beings to comprehend and change the world by imposing new constraints on their behavior (virtues) and their surroundings (culture). This further enhances their ability to semantically alter the world and themselves in order to achieve a more comprehensive and profound harmonization (quality) of their existence. Our thesis is in accordance with the conclusion of the aforementioned European meeting, which is that "if the science we desire is composed of ethical foundations that include social responsibility, then this approach is short-sighted." Our objective is to foster ethical reflections in dialogue as a hallmark of the future scientist (ibidem). In this paper, we concentrate on the role of scientific practice in ensuring the flourishing and innovation of our future societies, as well as the crucial role that universities play in fostering a quality-oriented attitude in new researchers, from the more general concept of practical truth. We will provide an example of the methodology we implemented in a recent research initiative that was promoted and coordinated at Campus Bio-Medico, and we will also discuss a specific project that we have been involved in over the most recent years.

Section 2 examines philosophical reflections on the role of universities in the development of knowledge. We contend that the most significant driving force behind research activities and academic training is the adherence to reality. This "realism" is currently dependent on the intrinsic relationship between the biological and technological dimensions of scientific inquiry and practice, and it faces its primary challenge in Section 3. Consequently, we are pleased to introduce an initiative that was initiated by the University Austral and involved the Campus Bio-Medico University (Section 4). This undertaking demonstrates the inexhaustible nature of the academic work dimensions that we regard as characteristics. The potential for students, instructors, and researchers to develop in the "hidden curriculum" (Hc) is rooted in these dimensions (Section 5). We use this term to describe the skills and values that inspire and facilitate the care of others in their physical, social, professional, and scientific needs. These skills and values are particularly important for individuals who will be responsible for legal, economic, and social responsibilities at the national and international levels.

1.2 Universities and knowledge

According to Enrico Cantore in the 1970s, "science is a fundamental component of the historical evolution of humanity as a cultural entity" (1977, p. xv). In those years, biotechnologies achieved one of their most significant accomplishments, enabling the manipulation of biological material in a manner that had never been observed in the history of humanity. In an effort to disclose the information encoded in the genetic code, significant genetic sequencing initiatives were initiated, with the support of both private foundations and local governments. According to Bertolaso (2011), the initial enthusiasm for the development of Human Enhancement Technologies (HET) was also justified by the gradual subordination of physics and chemistry to biological sciences and the aspiration to regulate life. However, "the human genome, like a good teacher, raises at least as many questions as it answers" (Abbs et al., 2004). As well, our capacity to manipulate human beings at the genetic, physiological, and emotional levels from the moment of their conception until their mortality has prompted significant concerns. This century commenced with a widespread recognition of the immense complexity of biological systems and an increasing recognition that uncertainty is the norm rather than the exception in the natural world and our daily lives, ranging from medical treatments and drug therapies to the markets and ecological changes.

The scientific community encountered a significant departure from the principles of positivism and empiricism that were established at the outset of the twentieth century. Paradigm transformations have been the hallmark of our educational, technological, and social investments since that time. It is intriguing that we transitioned from the development of Systems Biology to the research programs that were promoted in the United States. These programs prioritized the conceptual convergence among disciplines to establish interdisciplinary teams that were ultimately able to comprehend the vast quantities of data collected in a manner that was satisfactory (at least to the industries that were funding the projects) in terms of its explanatory framework and translational results. Science is being introduced to an unexplored realm of the integration of the natural with the artificial as a result of recent advancements in bio-engineering, such as the development of new devices to model biological processes and to integrate human physiological functions in a mechanical or informatic environment. The new discipline of "In silico medicine" (Bertolaso and MacLeod, 2016) is expanding our ability to circumvent the use of animals and in vivo tests in the clinical trials of drugs and devices. It is evident that these new technologies are changing our understanding of clinical practice and medicine, as well as the function of hospitals and, for instance, health insurance.

At the intersection of these scientific and technological concerns, there was and remains a question regarding the nature of the training and culture that universities should offer. Is it advisable for universities to operate in accordance with technological advancements and educate specialized individuals? Alternatively, should the academic work instead encourage the cultivation of a critical mindset that enables students to pose the appropriate questions rather than seeking the "correct" answers and guidelines? These concerns are particularly critical in the field of biomedical sciences. Pluralism of models and perspectives in the human and social sciences has replaced the aspiration for a unified theory (Dupré, 1993). Given this framework, what form of knowledge unity can the academic environment truly promote and facilitate? We should examine the dedication of universities to the establishment of an

educational environment that is capable of educating individuals whose primary interests are in the realm of social development and the common good. In the annals of universities, this is not unexpected. Various endeavors have been undertaken over time to address the unitary nature of knowledge. In the medieval era, when universities were first established, theology, or the sacra doctrina, underscored the universal nature of all knowledge within the "architecture of knowledge," as Lodovici's classic survey underscored (Lodovici, 2007).
The Renaissance would subsequently forsake the project of a unitary design for all knowledge, but it would maintain the human dimension at the core of the image of the world and of knowledge. Instead, the "Encyclopedie" project was centered on the concept of interiore homine, a novel-unifying trait that would proliferate during Illuminism. Afterward, the Hegelian-Marxian approaches, which emphasized the idealistic-historical trait of knowledge, as well as the conception of science (meant in its strictly pragmatic and functional sense), made external attempts to unify knowledge. The "myth of inter-disciplinary research" has emerged more recently. As per Lodovici's analysis, each of these perspectives ultimately identified itself with its own unique characteristic, adopting what we refer to as "metonymic vision." Consequently, each of these perspectives fails to capture the "unity-trait" they were initially striving to achieve for one reason or another. In other words, the systematic failure to elucidate the fundamental purpose of the University is the root of its decadence, as Lodovici (2007) has emphasized.

Tanzella-Nitti (1998) provides a comprehensive review of the topic, which was addressed in major works such as Humboldt's, Newman's, Jaspers', and Ortega y Gasset's. Additionally, certain authors regard it as a prospective field of research that has yet to be developed (Paoletti, 2010; Barnett and Di Napoli, 2008). The significance of the unity of knowledge has been the subject of traditional analyses, which have emphasized the values that should guide and construct universities. While the majority of these values remain valid, they now have a more global and intricate impact (Tosi, 2007; Tanzella-Nitti, 1998; Mayor, 2007). The interdisciplinary vocation should be prioritized in the development of universities, rather than being disregarded. The practice of science is, in fact, an objective-built practice that originates from a subjective-based process. By definition, scientific communities are required to consistently verify the creative and controlled nature of science. Additionally, each scientific community is accountable and dedicated to helping individuals by conducting research and advancing knowledge. Conversely, individuals are obligated to actively contribute to the broader communities and environments in which they reside. In this vein, sociological and biological research has demonstrated a parallelism between the fundamental concepts of "nesting" and "scaffolding": we are ecologically dependent on environments composed of embedded communities (Odling-Smee et al., 2003; Gilbert & Epel, 2009).

Despite the fact that the scientific methodology is founded on a trial-and-error approach, it is also culturally derived, meaning it is historically rooted. Nevertheless, it is the most effective instrument available (Joannidis, 2015) for the design, development, and testing of our own biases and errors at all levels: cognitive (structural limit), procedural (limit of knowledge), and practical (limit of measurement). In this regard, science is inherently in a state of flux: it is constrained, or at least ought to be constrained, by the boundaries established by the advancements it makes as it progresses. Consequently, science is progressively grappling with a boundary problem, which involves the opposing issues of interdisciplinary interactions and disciplinary specialization. Both issues demonstrate the challenges associated with communication between heterogeneous disciplines and within similar sectors of research. In

addition, the expansion of the topics and the subsequent level of complexity of the issues are influenced by the growing and expanding quantity of data and knowledge (Leonelli, 2013).

This ethics of progress without an intrinsic purpose, which is inherent to scientific practice, emphasizes several critical components that can be beneficial when contemplating new educational proposals (Meyer and Sandøe, 2012). The scientific method, as previously stated, is fundamentally a human practice that exposes our human nature. It challenges our preconceived notions and forces us to confront and experience our limitations, which are structural, procedural, and practical. Consequently, it brings to Earth any endeavor to advance in the process of science and knowledge in accordance with ideological or dogmatic beliefs (Giuliani et al., 2016). Moreover, the scientific method has consistently redefined its own boundaries, which have kept it alive for nearly four centuries, from an epistemological perspective. The practice of shaping and reshaping its borders may be considered the most living testament of science.

Consequently, the optimal solution to a particular issue does not inevitably arise from a two-fold or three-fold dialogue, such as the straightforward sum of the perspectives of three individuals. Tanzella-Nitti emphasizes that the "unity" we seek is not a sum, but a habitus, when striving for the unity of knowledge (Tanzella-Nitti, 1998). Unity is achieved when the intelligence and will of an individual are integrated and interwoven in both theory and practice. In other words, the actions of individuals foster unity. At maturity, an individual is capable of exercising judgment and will, thereby confirming their own intelligence, spirituality, and affection while making personal decisions and taking public action. The assertion and justification of one's own assertions, as well as the firm confrontation with the creeds and opinions of others, would be more logical when these decisions and actions are based on substantial knowledge.

1.3 Social responsibility in the educational training

The establishment of certain universities was specifically designed to foster the unity of knowledge by educating individuals in the aforementioned habitus, which is based on a unitary perspective on the human being, society, and our role in the world in both our professional and personal lives. Within this framework, science is evidently focused on the common welfare and is employed to benefit the individual. The aforementioned dichotomy between science and society, between truth and quality, is avoided by such universities by recognizing scientific practice as a human enterprise, a specific form of work that enables us to comprehend and address certain aspects of the natural world in quantitative terms. One of those universities is the Campus Bio-Medico University of Rome. According to its website, Campus Bio-Medico is dedicated to the advancement of integrated healthcare, research, and teaching structures, with the primary objective of enhancing the well-being of individuals.

The University provides students with an educational environment that is designed to foster their cultural, professional, and human development, advocating for the acquisition of skills in a spirit of service. It fosters research in all disciplines that contribute to the overall well-being of the human person, as well as knowledge and the interdisciplinarity of the sciences. Patients are provided with care that is consistent with their spiritual and material requirements, in accordance with a perspective on life that is receptive to the notion of transcendence.3. Training

in the disciplines is therefore a pathway to a human society. The natural consequence of these training and teaching programs is that the experts in their respective fields and in their collaborations with others to advance the common good exhibit a contrite and balanced demeanor. In the same vein, the mission of the Universidad Austral (Argentina) is articulated on its website as follows: "To serve society by pursuing truth, creating and disseminating knowledge, educating on virtues, and catering to every individual's transcendent destiny, providing intellectual, professional, social, and public leadership."

the challenge that was explicitly stated in the EU framework program for research and innovation (Horizon, 2020). The nature of the relationship between science and society has been altered by the increasing complexity of all issues, as citizens are more reliant on science and vice versa. In accordance with the primary objective of the Horizon 2020 section "Science with and for society," our objective is to "develop innovative methods of connecting science to society and build capacities," thereby enabling our researchers and students to invest in their personal characteristics in addition to their practical and technical skills. This will "increase the appetite of society for innovation, make science more appealing, and facilitate the development of additional research and innovation activities" (ibidem).

Bio-techno-practice

The Bio-Techno-Practice (BTP) framework, which is elucidated below, is unquestionably the most pertinent challenge we must confront, given the increasing demand for (health) care assistance and the technological advancements of the past few decades. In the face of the expanding technocracy, the construction of human societies necessitates a profound examination of the world, the other, and societies with benevolence. This entails the abandonment of functional frameworks and the expansion of care paradigms. In fact, this has been a burgeoning field of research, market activity, and theoretical activity in the past decade, spanning from humans to ecology. Our obligation is to equip scientists with the skills necessary to not only navigate this transdisciplinary landscape, but also to establish and pursue ethical goals in their daily work. The name of a university research empowering center is Bio-Techno-Practice (BTP) (www.biotechnopractice.org). BTP is founded on a reimagined philosophy of science that acknowledges the simultaneous involvement of numerous constitutive dimensions of human understanding in scientific practice. This philosophy is used to aggregate and coordinate the work of top scholars on specific initiatives. Conversely, the directions of scientific inquiry are influenced by human practice. This awareness is converging with the urgency of new scientific practice accounts: new methods of conducting science are swiftly emerging, integrating life sciences, technology, and other natural, human, and social sciences.

Campus Bio-Medico University is an especially suitable platform for BTP due to two key characteristics: (a) the explicit mission (as outlined in the University foundation act) to (re)integrate all aspects of the individual into a unified framework, and (b) the actively promoted interdisciplinary exchanges between biomedicine, engineering, philosophy, and other disciplines.

Allow us to define the term "Bio-Techno-Practice." Bio*, the living, is the center of complexity, a state of precise structural and functional multi-layered organization and integration. The prefix "bio" is increasingly prevalent in a variety of disciplines, including architecture, urban planning, food, robotics, informatics, and clothing. It is improbable that this

is a casual tribute to the media-driven manner in which biology is identified as the central science of the present. Bio-related concepts are essential to the description of modern society, informatics, artificial systems, and our daily lives. In fact, Bio* can be interpreted as transcending the biological realm to encompass the physical, social, and, in the most general sense, phenomena-based world. A common need for a change in the way we view technology is identified in technological domains by reference to biological organization. In the same vein, biology explicitly references technological tasks and activities as denoted by terms such as biotechnology, bioinformatics, systems and computational biology, bionics, and bio-inspired robotics.

In the event that bio-related concepts are indeed ubiquitous in our society, their significance to our comprehension is not yet recognized. In a sense, biology appears to be well within the mechanistic paradigms that other sciences have long since overcome, whereas other fields of investigation have leveraged the peculiar organization principles at the foundation of biological systems (albeit in a seminal, largely unconscious, and somewhat superficial manner). Although the role and structure of organization have been fundamental to biological thinking for a long time, biology has endeavored to incorporate reductionist and linear mechanistic models from physics. The implementation of this strategy resulted in significant economic investments and communication successes, but it failed to foster a comprehensive understanding of the intricate natural dynamics. In this regard, the essentialist perspective still dominates the vast majority of scientific practice in the life sciences, as it regards the molecular components of biological systems (genes, proteins) as intelligent agents responsible for the global organisation.

Techno may encompass hardware, such as robotics or prostheses, software, such as computer simulation programs and models, or pure theory, such as scientific paradigms. The potent transformation of reality in accordance with certain prescriptions and values, as well as a critical involvement in explanatory endeavors, are common to all of these. Techno* is becoming more and more essential to our comprehension of the world. Simultaneously, recent technological advancements have resulted in artifacts whose inherent complexity is not entirely manageable by their designers. In certain instances, these artifacts have acquired a self-sufficient existence that necessitates an approach similar to that of biological sciences. The inclusion of "scientific paradigms" and "theory" in the technological domain is not without repercussions. The universal use of automated computation has enabled the freezing of scientific theories into "ready-to-use" software. One the one hand, the automatization of theories broadens their domain to include very distant disciplines for which they can provide useful metaphors (an example is the significant expansion of the application range of statistical mechanics as a result of complex network descriptors). However, it also implies a fatal lack of awareness of the theory's premises and consequences, which can be highly misleading and, more importantly, leads to a substantial lack of a thorough understanding of what is effectively accomplished.

Lastly, practice is the context in which comprehension occurs; it is the location where knowledge is generated, disseminated, and implemented. We validate the necessity of having "practical consequences" and being "committed to the world" of any theory that deserves this title (rather than being a piece of software or a gorgeous, but unusable, piece of mathematics) by emphasizing practice. A revised philosophy of science acknowledges that scientific practice is concurrently influenced by numerous constitutive dimensions of human understanding. Conversely, the directions of scientific investigation are influenced by human practice. This

aligns with the necessity of novel understandings of scientific practice that have resulted from the Bio-Techno merger.

In the subsequent section, we demonstrate the potential and fertility of educational endeavors that are initiated in universities when their objectives are motivated by the integration and adherence to reality that we have delineated in the preceding sections. In this section, we examine the collaborative efforts of academics and scientists from a variety of disciplines and universities to execute a project that is designed to improve research in an interdisciplinary setting and to provide young researchers with stimulating work environments. In reality, science is "an activity performed by people, with all their skills, attitudes, and circumstances," as we have recently asserted in collaboration with our colleagues (Bertolaso et al., 2015). Science cannot be reduced to the logical inference and observational abilities of a single scientist; it is not a modular activity. Rather, it is an essential personal pursuit. A form of harmony or equilibrium is achieved through scientific rationality, which is the outcome of the dosage and scheduling of the combination of all contextual circumstances and capabilities. Practice* is also the practical life that is experienced by patients and physicians, students and teachers, families and citizens, and individuals in a variety of conditions and situations, including poverty and any type of need. It is also the life of humanity in its environment and interconnected with other forms of life. Science, Bio, and Techno are obligated to achieve new heights within the context of practice.

A pilot project:

"Indeterminism and determinism in the natural world" After introducing Bio-techno-practice as a general approach and a concrete initiative that originated at Campus BioMedico University of Rome but has since expanded internationally, we will now examine a specific project, the recently concluded three-year project "Determinism and Indeterminism: From Science to Philosophy in Spanish-Speaking Academia" (2013-2015), which was led by Claudia Vanney and was located at Universidad Austral (Argentina). The case demonstrates how the education of students and the work of researchers can be framed within a perspective that is open to philosophical issues during the process of knowledge. This perspective is the foundation of ethical decisions and is, in fact, at the core of the interests of Campus Bio-Medico University of Rome [CBM] and Universidad Austral [UA].

The initiative was designed to address three significant questions in the field of contemporary science. The initial inquiry pertains to the concept of determinism in the neurosciences, biology, and physics, as well as the question of whether life and consciousness are appropriately interpreted exclusively in terms of intricate material phenomena. It may be articulated as follows: How do we comprehend determinism in the neurosciences, biology, and physics? The second inquiry pertains to the ontological foundation of nature and the manner in which it is addressed by the neurosciences, biology, and physics. This inquiry may be expressed as follows: In what sense does contemporary physics offer a deterministic or indeterministic view of nature? What is the influence of this image on the cognitive sciences and biology? Are matter, life, and intellectual consciousness merely progressively more complex or do they correspond to ontologically distinct principles? The third query assesses the impact of indeterminism on the question of a creator and provident God: How can we comprehend the universe's reliance on God? Are a creator and provident God excluded by physical laws? Is divine action contingent upon an indeterministic nature?

The project's objective was to systematically transcend the boundaries of what is traditionally regarded as scientific, philosophical, or theological in order to confront the unique challenge of achieving an interdisciplinary understanding and to establish a shared technical vocabulary that fosters dialogue among Spanish-speaking scholars from various disciplines. This was done in relation to these issues. The initiative aimed to cultivate a regional network of researchers who are interested in the dialogue between science and philosophy and to promote high-level interdisciplinary research. In addition, the initiative was intended to spur the development of additional interdisciplinary projects of a similar nature in the region, in collaboration with institutions from other countries.

Materials and methods

There were three intensive Interdisciplinary Research Weeks and a monthly seminar titled Determinism and Freedom that were implemented over the course of three years. The Determinism and Freedom seminar, which convened researchers on a regular basis, was held seven times annually and served as the project's backbone. With the objective of achieving cross-disciplinary comprehension, it comprised selected presentations that addressed alternative philosophical and scientific viewpoints. We utilized the three Interdisciplinary Research Weeks as networking opportunities. Activities such as the following were coordinated during their duration: 1) two public key-note addresses; 2) a six-hour course for academics; and 3) a three-day workshop for researchers working in the fields of physics, biology, neuroscience, philosophy, or theology.

Three-day seminars were designed to encourage advanced interdisciplinary research and included six working sessions, two of which were conducted each day. Each module was derived from a specific query, which was based on the current state-of-the-art and the results that the researchers involved in the project had previously obtained. Each query necessitated the participation of two academics from distinct fields. The Workshops were designed to provide each team of lecturers with an extended opportunity to conduct research. Around six months prior to each Workshop, each pair of academics began exchanging ideas and suggestions to prepare their contributions to the shared work. During the Workshops, they were afforded the opportunity to participate in advanced criticism and discussion with the other participants. Throughout the working sessions, the following methodology was adhered to. The first speaker articulated the status questions, suggested a prospective response from their field, and paved the way for a complementary perspective from the partner's perspective. Upon reviewing the initial presentation, the respondent assessed its contributions and suggested a potential solution from their field. After that, the session was available for queries and comments from the participants. The Project resulted in the publication of three popular science novels and three collective academic volumes.

The project also conducted two journalistic article competitions between June 1, 2013 and May 31, 2015, with the objective of fostering the dissemination of scientific knowledge in the mass media. Two mass-media compositions were recognized in each competition. The primary outcomes include public engagement, new academic infrastructure, expertise, and a network. The activities that were conducted during the three-year project period enabled the original team of researchers to solidify their interdisciplinary expertise and to establish the foundation of a robust network of Spanish-speaking experts. This network included scientists who were

inclined to investigate the philosophical and theological underpinnings of their respective fields, as well as young philosophers who were developing a growing interest in science. The academic team enhanced their interdisciplinary expertise and network in relation to the personnel's expertise. The project's researchers are currently engaged in novel interdisciplinary projects: 1) "Interdisciplinary Dictionary on Science, Philosophy, and Theology," a three-year initiative that will generate and distribute an online interdisciplinary dictionary in Spanish that adheres to the most rigorous academic standards and covers the primary subjects related to the interplay between science, philosophy, and theology. 8; 2) "The nature of information for an informational reformulation of the modal-Hamiltonian interpretation of quantum mechanics," an initiative that aims to reframe the Modal-Hamiltonian Interpretation in informational terms; and) "The Brain and the Personal Self."

Is it possible for the concept of "person" to be illuminated by contemporary neuroscience? This project's overarching objective is to cultivate productive, constructive, and positive interactions among neuroscientists, philosophers, and theologians in the Argentinian context. One of the most significant outcomes of the spawned initiatives was the gradual establishment of a network of theologians, philosophers, and scientists that was constantly expanding. There is currently a substantial number of academicians who are genuinely interested in the development of joint ventures and the comprehension of seemingly disparate fields. Within the initiative, the three Interdisciplinary Research Weeks and the collective academic volumes were a prominent set of events. The development of substantial interdisciplinary expertise in the region was facilitated by them, and the opportunity to establish new contacts between the network members was provided. Ten scholars were part of the team at the outset of the initiative, and they collaborated with five researchers from four other Argentinian universities and ten researchers from seven Latin American and European universities. However, the Philosophy Institute's present network comprises one hundred and fifty-five researchers from forty-five universities and eleven countries. Within this group, seventy-two are novice scholars and eighty are senior scholars. Forty-seven percent (47%) of these academics are employed in the natural sciences, with a focus on physics, biology, and biomedical science. Forty-four percent (44%) are employed in the fields of philosophy and theology, and nine (9%) are employed in the social sciences.

Out of these scholars, ninety were actively involved in the project's outputs, either as invited speakers or authors of a piece of work. The remaining sixty-two scholars attended a variety of activities. In order to promote a more informed discourse in our society, the Institute of Philosophy has initiated a new collection of books entitled "De las Ciencias a la Filosofía" ("From Sciences to Philosophy"), which focuses on topics related to science, philosophy, and theology. This initiative contributes to the development of new academic infrastructure. The three high-level dissemination books that were generated during the project, as well as the collective book that emerged from the discussions during the three Interdisciplinary Research Weeks, are included in this collection. The books are accessible in both paper and digital formats to facilitate their accessibility throughout Latin America. In terms of public engagement, the project's initial objective was to engage a non-specialist audience through the production of numerous outputs. The website was employed to disseminate information and to channel the public's interest. A series of YouTube videos was also created to disseminate the results to a broader audience. Three popular science books were published and distributed to six hundred secondary schools in Argentina. In order to encourage the dissemination of scientific knowledge in the mass media, the Project arranged two competitions for journalistic articles that addressed the project's topics in a public setting. These competitions led to the

establishment of a substantial database of academics and science journalists who are interested in writing about interdisciplinary issues in the media. There are currently over three hundred contacts in the project-based network of Spanish-speaking journalists and academics who are involved in the dissemination of science.

In conclusion, the curriculum is concealed. It has become increasingly prevalent to contend that science and scientists have obligations to society. Nevertheless, the agreement dissipates as we begin to examine the nature of these responsibilities. This paper contends that the integration of at least three distinct elements is necessary to foster a genuine sense of social responsibility among scientists: quality, credibility, and practical truth, as evidenced by a recent discourse analysis of academic meetings and projects. The role of science in society and the method of evaluating and assessing the quality of scientific knowledge production are the specific definitions of each of these features of the academic enterprise. Additionally, each of them may serve as a specific criterion for the regulation of the boundary between (or integration of) science and society. This integration can be viewed from a variety of angles. As per Michael Polanyi, "the fecundity of a scientific discovery is its greatness" (Polanyi 1961, p. 155). This fertility is feasible when scientific advancement and discovery are genuinely founded upon a broad cultural framework. Consequently, as we are at the forefront of new revolutionary technologies, we are witnessing a point of no return in the specialization of research disciplines. Nevertheless, we continue to emphasize the importance of knowledge unity (Barnett, 2005).

The concept of an ethical praxis, which can be understood at the very core of science and its methodology, should serve as a unifying foundation for incisive educational purposes. If we recognize the ongoing reference to the power of referencing reality, this connection between knowledge and praxis is feasible. Polanyi also noted that "reality is something that captures our attention through clues that stimulate and entice our minds to delve deeper into it, and that, due to its independent existence, can always manifest itself in unforeseen ways" (Polanyi 1961, p. 155). Conversely, Benedict XVI expressed his desire for the realism of history in his 2010 speech in London as a countermeasure to the dangers posed by narcissism and a form of auto-referential science. An answer to this hope is a perspective that is grounded in reality and practice. This perspective suggests that research programs must be grounded in the historical and dynamical actuality of the universities, as well as the personal and collective paths that exist within them. This investment will also serve as an antidote to the current skepticism regarding a form of reflection that is not based on the study and understanding of history and the historical justifications for current philosophical trends. Faith is utilized to address both new and old inquiries regarding God within this framework, indicating the path to a reciprocal autonomy of God truth and practical truth in a manner that does not eliminate one in order to assert the other.

These perspectives on the academic environment and activity should also contribute to the establishment of new foundations for the concept of "excellence" by connecting the concepts of "quality" and "credibility" through the study of practical truth. This dimension defines the university as a scientific community and a community of knowledge that demonstrates the potential of this knowledge to influence the lives of individuals and their communities (technological, social, etc.). This final aspect is partially represented by Hc, which refers to the capacity of individuals to address the physical, social, professional, and scientific requirements of one another. This entails the pursuit of further growth and development in an academic

setting, all the while fostering more sustainable societies. The Hc is a lifestyle. In order to address the weakness of Information Theory, which attempted to define the specificity of living systems in essentially non-active terms, Waddington stated that "One gains a more accurate understanding of the true nature of the complex systems we encounter if one considers them in terms of the amount of information they contain, rather than the more dynamic question of how much instruction was required to create them or what instructions they tend to impose on their surroundings" (1977, p. 145). This is of particular contemporary importance, as there is currently an acknowledged crisis in quality assurance in the field of science, a situation that would have been unthinkable under the conventional paradigm. The potential adversary of quality in science is "excellence," which is undemocratically operationalized without scrutiny. From this perspective, "excellence" is a negative category, a means of evading the general responsibilities of the social work of science.

We are of the opinion that the resolution of this crisis will not be achieved by implementing more effective refereeing techniques or by rectifying some of the numerous pernicious incentives present in current scientific practice. Despite their necessity, they are limited to the conventionally acknowledged forms of scientific practice. That is why we have scheduled these meetings, not only to engage in a more general discussion of the issues, but also to investigate more exploratory and ambitious approaches. We do not anticipate the discovery of solutions; however, we can aspire to formulate some pertinent inquiries as a result. We have demonstrated the potential and fertility of educational work developed in universities that are not motivated by market and economic interests, but rather by a genuine understanding of society and its cultural challenges, in order to provide an example of how this could be implemented. In particular, we have contended that institutional commitment in university programs should promote the development of all disciplines within a unitary perspective. It is important to remember that the university was established with the objective of uniting all sciences; however, this objective was quickly abandoned, resulting in a loss of communication with society (Lorenzelli, 2003).

The BioTechno-Practice perspective has been presented as an updated version of the vocation to combine knowledge, which has been adapted to the current trends in science and society. This perspective has been made concrete in an academic initiative, a "research empowering hub," that is located at Campus Bio-Medico University. Subsequently, we have examined a case study, a project, in which academics and scientists from various disciplines and universities have collaborated to improve research in an interdisciplinary setting and instruct young researchers in stimulating work environments. We have presented "Determinism and Indeterminism in the Natural World," the project that we have been developing and funding through the John Templeton Foundation, as a departure from the discussion of the significant educational challenges that universities must confront in our society. The integration of disciplines and sciences is nourished by the contributions of individuals who have been able to apply their own knowledge and expertise to the benefit of others and a shared endeavor. The professional success of the academic integration of various research perspectives and expertise is a metric by which the "excellence" of the results of such a project can be measured.

This case study also demonstrates that coordination and management are indispensable components of a project and are equally critical for the advancement of the research program and the empowerment of the human environment. Successful collaborations are contingent upon these components. The specific purpose of empowering the human environment is

demonstrated by its fecundity in terms of satisfaction and the potential for new interdisciplinary collaborations and research programs within the University and among various professions. Additionally, as a long-term result, it guarantees the successful convergence of technological opportunities, social and cultural requirements, as well as challenges and solutions, in the interest of each individual, cultural environments, or overall societies. The capacity to articulate one's thoughts is referred to as Hc. own richness, which lies beneath the professional and disciplinary specificity of any individual, and to broaden it beyond specific interests by engaging with the common interests and research topics of others. Our proposal is fundamentally founded on the ethics of scientific method and the integrity of humanist-scientific practice, with a particular emphasis on international and interdisciplinary characteristics.

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