

THE EVOLUTION OF THE ENTREPRENEURIAL UNIVERSITY IN EUROPE

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Abstract

The role of this study is to present the theory of the entrepreneurial university and the effects of implementing Clark's model in five universities in England, Scotland, the Netherlands, Finland, and Sweden, in order to prove how this vision impacts the management of public institutions, the academic communities, the visibility and quality of university research and educational products.

The data processed in this article has been collected from research conducted from 1980 to 2010 which led to the formulation of concepts and efficiency factors for entrepreneurial universities, in which the central poles of the managerial system rely on the satisfaction of the customer-beneficiary and on the externalization of the academic results in an industrial type of context.

Key words: Entrepreneurial University, Management Models, Institutional Efficiency

JEL Classification: L26, L32, A14, O36, I20

1. Introduction

The European Commission published in 2003 a regulatory act which stressed the compulsoriness of universities to intensify scientific cooperation with specialized industries and the employment sector, in favour of increasing satisfaction for the students and graduates they are responsible for. The current belief is that this preoccupation should be a priority for the institutions which aim to be competitive, innovating, and relevant and transfer knowledge that is useful in industrial practice.

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It is generally admitted that the universities of the future do not have a simple mission, as the challenges come particularly from the extremely volatile external environment that provides more and more new specificities and directions.

An aspect highlighted by the literature and the models implemented over the past few years, all over the world, is that this connection between universities and the employment market can be constructed progressively, in safe conditions, with the help of various means, starting from an entrepreneurial framework with a limited curriculum scope and reaching all the way to the administration of *spin-offs* and *start-ups* in the university itself.

Being a relatively new field, the literature has not yet reached consensus regarding the definitions appropriate for the *entrepreneurial university*, but has highlighted several similitudes wherefrom we can extract the factors that stand out and can be accepted as being specifically entrepreneurial:

1. Etzkowitz (1983): The entrepreneurial universities are those institutions that are searching for new financial resources (such as patents, research projects, intellectual capitals), being open to partnerships with private regional enterprises.
2. Chrisman (1995): The entrepreneurial university involves the creation of new business spaces within the academic communities, dedicated to students, teaching staff, researchers, technicians.
3. Dill (1995): The entrepreneurial universities are defined by the transfer of technology and by the effort to capitalize on the outcomes of their research by fructifying and commercializing them.
4. Clark (1998): An entrepreneurial university searches for a business position through innovation, it makes radical organizational changes in order to reach a competitive level.
5. Ropke (1998): The entrepreneurial university is defined by three coordinates: it becomes a business itself, the members of the academic community turn into entrepreneurs, the institution interacts with the socio-economic environment.
6. Subotzky (1999): The entrepreneurial feature relies on the public-private partnership, on the strategy used by the university to attract external funds and by the presence of a specifically

entrepreneurial mentality which is quite visible in the institutional management and policies.

7. Kirby (2002): The core of the entrepreneurial culture is defined by the university's ability to innovate, recognize and create opportunities, to act in teams, to take risks, and to react to challenges.
8. Etzkowitz (2003): The entrepreneurial environment acts as a natural business incubator that lives within the university and offers support to the community of students and teaching staff in order to gather and export new intellectual capitals for commercial purposes.

The defining factors for the *entrepreneurial university* are innovation and the capacity of institutions to recognize, create, and exploit opportunities. The ideal environment for its development can be supported with the help of two types of initiatives, both formal and informal, using the following lines of actions:

Formal actions for entrepreneurial universities	Informal actions for entrepreneurial universities
The organizational structure and the university policies that support entrepreneurship by <ul style="list-style-type: none"> - Changing the mission, the strategic management, adopting a flexible and independent vision 	Developing entrepreneurial attitudes <ul style="list-style-type: none"> - Students, teaching staff, administrative staff, researchers, managerial team
Support tools for university <i>start-ups</i> <ul style="list-style-type: none"> - Offering expert information, consultancy, spaces for business incubators 	Providing specific training for the academic communities <ul style="list-style-type: none"> - Editing teaching methodologies oriented towards entrepreneurial thinking
Opening academic programmes specializing in entrepreneurship <ul style="list-style-type: none"> - Doctoral and master degrees, postgraduate programmes with transversal role 	Presentation of models and devising a reward system for the entrepreneurial activity <ul style="list-style-type: none"> - Offering prizes to students and teaching staff who are successful in the field of entrepreneurship

Processing of graphic information: Cano Maribel - A literature review of entrepreneurial universities – an institutional approach

2. *Entrepreneurship and intrapreneurship of management systems in the literature*

The great majority of the research that defines the term *entrepreneurial university* focuses on modernizing the strategies, the organizational structures, and the management style which should be reoriented so as to exploit academic values in favour of the transfer of knowledge towards the labour sector (Audretsch, 2014). An entrepreneurial educational institution should follow three directions in formulating its managerial strategies:

- Basic academic research,
- Applied research,
- Relationship to the employment sector-internships and other types of collaboration

An essential component for the entrepreneurial models is the flexibility and the openness towards an exchange of resources with the industrial environment (Novotny, 2008). These collaborations are necessary for the development and the adaptation of the action sectors, both the commercial and the academic ones, they are open to current social, economic, scientific, and political changes, being fast and relevant to the external environment.

The entrepreneurial concept resorts to a change in the style of management, to rethinking the mission and upgrading the academic tradition in an improved form (Slipersater, 2007), in favour of increasing the satisfaction of the beneficiaries and the significance that the institution has for the regional community, as well as for the industry that corresponds to its domain of expertise.

Some more extensive research also brings up the term *intrapreneurship* (Husrich, 2001), referring to the internal environment of the organization, namely to its orientation towards building competitive strategies *in situ*. The *intrapreneurship* impacts the attitude of the academic staff in universities, transforming them into proactive resources able to generate supplementary funding with the potential of improving the environment in which they work, and also to bring, with their help, a supplementary benefit to the organization. Developing the *intrapreneurial* culture, the employee becomes directly responsible for the institution's success, being willing to assume a high degree of responsibility.

In relationship to the external environment, the entrepreneurship sees the university as a competitive pillar that advances fast in terms of visibility and economic utility.

Klasova (2017) defines the entrepreneurial university management by the compulsoriness to change the paradigm. This vision concentrates mostly on the transfer of academic knowledge towards a safe and dynamic market. Klasova thinks that the modernization of the traditional educational system and the integration of plans for university marketing and socio-economic utility are essential. The arguments offered by Klasova's theories concentrate on the role that the university holds in society, in order to justify the compromises required to surpass the traditional patterns when the adoption of the entrepreneurial *community relevance strategies* is brought up.

Druker (1985) presents the organizational entrepreneurial process by means of four constitutive elements: defining the mission; formulating a realistic strategy in order to reach the goals; taking the risk; manifesting a constant desire to search for innovation and opportunity. From the organizational point of view, this model would endow the university structure with effectiveness, flexibility, and efficiency (Sporn, 2001).

Similar (2007) considers it compulsory that the role of the university should change, abandoning the unidirectional conservative style which solely delivers knowledge, in favour of a management oriented towards the employment of practical knowledge that can formulate concrete expertise linked to real problems from the external environment.

The entrepreneurial university, as seen by Etzkowits (1983), is a replica of an organization that builds development strategies fusing with pedagogical, economic, and research variables. These require the institution to invent new degree courses or develop the content of the traditional ones so as to integrate subjects that treat the "market needs".

We can also understand that the topics dealing with this kind of entrepreneurial approach focus mainly on the production, dissemination and trading of academic knowledge with a view to developing the consumption market.

The great majority of theorists who have investigated the entrepreneurial concept in universities have also stressed the crucial position that the attitude and the behaviour of the internal human resource hold. The adoption of a new entrepreneurial culture appeals to changing the work

climate, to awaking each individual's responsibility, and exporting the intellectual production, so that the entire academic community may be involved.

3. The Etzkowitz-Clark entrepreneurial university models

The first entrepreneurial university model was proposed by Clark in 1998 based on studies performed in several European universities which were about to implement new strategies of curriculum modernization. Adopting these ideas, Etzkowitz (2000) defined a university entrepreneurial structure that can function by fulfilling the following criteria:

- The internal transformation of the organization by revising management, structure, and staff duties
- Coordination of a large number of external, trans-institutional projects, that can provide stability for the entrepreneurial concept
- Implementation of an interface process in which the centralized management system goes into a decentralized stage, making the staff even more responsible and encouraging proactive attitudes
- Pursuing recursive effects by means of at least trilateral partnerships with external bodies, such as in the case of the public-private dialogue.

After having researched academic management in Europe, Latin America, and the USA for a long time, in 2004 Etzkowitz proposed a solution that completed the entrepreneurial model by laying down the following coordinates:

- Employing knowledge, products, and results for commercial purposes
- Interdependence between school, industry, and decision-making (financial and political) authorities
- Implementation of hybrid organizational forms that provide flexibility in curricular modernization.

4. The Warwick entrepreneurial university model

Burton Clark, an American researcher of university management, dedicated over 50 years to the evolution of educational institutions. Since 1980 he has shown a constant preoccupation for institutional reforms, and in the course of time has performed multiple analyses meant to measure the effort and outcomes that the universities can obtain in a relatively short time, with an efficient and well defined strategy, which he named *entrepreneurial*.

The first institution where Clark studied the entrepreneurial model was the University of Warwick in Great Britain. The study was carried on in the mid '90s, relying on the administrative managerial model focussing on the bilateral entrepreneurial dynamization of the human resources and the financial resources. It has been proved by implementing this model that a relatively simple strategy focusing on stimulating the academic community to identify and use opportunities in the external environment in favour of research projects can guide the entrepreneurial responsibility towards individual directions, thus bringing new perspectives to the externalization of the academic production.

The major financial investments in changing the institutional strategy in the Warwick model were directed towards the training of the human resources, as well as on increasing the quality of the working environment by providing a state-of-the-art infrastructure. For this university, the implementation of the entrepreneurial model did not require a change of the academic subject content or of the curricular structure, but a change of the communication strategy and the technologization of the educational tools used in the teaching-learning processes.

On the administrative level, the Warwick model focused on completing the infrastructure, by setting up an incubator for the alumni who did not manage to find jobs immediately after graduation and thus received help to start small businesses and, in some isolated cases, counsel for professional reconversion. Due to this action the Warwick model proved to be a “win-win” solution, as the small companies created like this had a double role – they offered supplementary qualification for alumni in other fields than the original ones, as well as exported and traded academic products.

One of the incubators of the Warwick model was an art centre coordinated by the university which gathered on average 200.000 visitors at the 1000 annual events it organized. Being located strategically outside the town in an area preferred by tourists, this centre managed to sell goods amounting to 1 million euro/year, of which an important part returned to the university's accounts.

Without in any way compromising its scientific and research value and its teaching tradition, the University of Warwick proved a maximal entrepreneurial efficiency by using the human resources. Focusing on this aspect, its strategy implied the attraction of external collaborations in the

research projects and the academic relationships. In favour of rewarding the staff that accessed external funds through research projects, the managerial system was rethought and its target became to create a high number of active partnerships, which assured the dissemination of the results of academic products on a large scale.

The next step in developing the entrepreneurial model was to build departments of interdisciplinary education, and the University of Warwick became the first institution in Great Britain to implement a plan of curricular fusion with the industries in the area. They insisted on the infrastructure destined for experiments and conferences, so that the institution may offer the best conditions to host scientific lectures and applications for advanced research emerging from these partners.

In the entrepreneurial strategy adopted by the University of Warwick the main focus was on:

- To maintain an elite level in research, teaching, and administration
- To increase the university's relevance for the region, in economic terms
- To provide a high performance infrastructure, stressing the digital technologies.

Another opportunity that changed the ambiance of the internal environment, leading in the course of time to the consolidation of an innovating and flexible system, was the technologization of the educational process, by extending the access to virtual research networks and the educational complementarity through transdisciplinary degree courses, distance learning, training and refresher courses in related secondary qualifications, etc.

In conclusion, the Warwick entrepreneurial model was grounded on the stimulation of the human resource management by identifying and exploiting opportunities and immediate earnings. The invention and the development of the interdisciplinary centres as business incubators for students and alumni was a "win-win" strategy where the university found collaborators and intermediated the insertion of the students on the employment market.

5. The Strathclyde entrepreneurial university model

Being over 200 years old, the University of Strathclyde started its activity as a college meant to educate engineers, having the opportunity of being located in a region with many industrial advantages. Thus, the tendencies of implementing the entrepreneurial techniques emerged from the very beginning as an effect of the external environment's influence. Starting with 1990, the university implemented a variety of entrepreneurial actions that led to the attraction of external financing and to the collaboration with the companies in the area. The institution, which was experiencing an intense and permanent development, was noticed by the British Government, which considered that it could be used to create an important pillar of economic growth. As a result, the political concern materialized in a supplementary financial support, offered for the promotion of academic products in the country and abroad.

With the help of the governmental support, Strathclyde became one of the most prosperous university entities in Scotland, being seen today as an emblem of national efficiency, of evolution, modernity, and transdisciplinarity.

One of the special aspects of this model was the financial and administrative decentralization into faculties and departments. More precisely, the university applied an algorithm that allotted percentages of its budget and direct responsibilities for investments and expenses to small university departments. This managerial method proved to have positive effects, materializing in fact into a set of new responsibilities given to the human resources in each department. Thus, the academic staff, the researchers, and the students were entrusted with the design and the optimal spending of the institution's investment fund.

At managerial level, the *departmental budgets holders* were required to supervise the direction that the subunits' investment would follow, a direction meant to support the institutional development strategy and scientific progress and the improve the institution's image.

As an effect of this model's implementation, several collaboration agreements were concluded between the university research teams and the companies in the area. Beside the *public-private* relationships, the university also supported the financing of a company meant to test, externalize, and sell the academic and research products and services.

The managerial intentions were that the university should intermediate the transfer of knowledge to the industrial practice and that levers should be identified that would bring the two entities (companies and university) close together in terms of technologies, development of knowledge, and competences, etc.

Another principle integrated into this model of entrepreneurship was the *lifelong learning* which this university employed since the very beginning of the activity. The related services involved in the Strathclyde model comprised training courses for the current teachers of the pre-university environment (in order that they should be able to modernize teaching techniques and contents), specializations dedicated to the employees of companies and *basic* courses for the non-specialist community.

The integration in the university space, like in the Warwick model, of an entrepreneurial centre where the students and the alumni could work together and initiate *start-ups* brought supplementary incomes to the university. From 1996 to 2000 the University of Strathclyde had doubled the level of investments made from its own funds by merely maintaining these companies attached to its faculties and the centre dedicated to the students-alumni cooperation.

6. The Twente entrepreneurial university model

The University of Twente in the Netherlands adopted several radical managerial reforms during its existence, but the most obvious was the one in 1998, when the departments and the faculties were granted the autonomy to increase their financial resources by concluding their own external contracts. Being an institution that already had a long tradition and consistent academic results, it managed to quite rapidly convince the corresponding institutions outside the country to associate with it and contribute to the implementation of large-scale research projects.

A change in the managerial attitude took place within the University Department for *Research, Development, and Transfer*, which was assigned the counselling of the alumni in starting their own businesses, within two years of graduation. The existence of these incubators integrated in the institutional reserve also stimulated the students, who manifested interest in implementing business ideas and in devising viable business plans before graduation.

The stimulation of the young students and alumni was empowered by the arrival of the Swiss giant Ericsson, which developed a technology park in the neighbourhood of the university, thus creating supplementary opportunities for university cooperation and jobs for graduates.

Starting with 1990 the Netherlands developed networks of universities whose role was to offer short-term specialization courses to companies, leading to the appearance of extra income from a series of post-graduate courses.

Regarding the profile of the institutional management, this model attracts the attention towards the administration of the control level (Clark, 2004), concluding that in the system of the managerial decentralization the entrepreneurial attitude tends to be individualized, so that the institution is faced with the risk of losing the managerial control and implicitly the academic quality, motivated by an excessive preoccupation to derive income on their own from the university's results. This less positive fragmentation, says Clark, could have been avoided, however: if the responsibility had moved from the individual to the collective level the specialized teaching staff would no longer have felt forced to abandon their scientific preoccupations.

A superior stage in the case of this model appeared in the year 2000, when Twente University made a decision to radically change the curricular structure, in almost all of its specializations. The basis of this new reform was the design of a common core of academic disciplines considered minimal ones, beside which the students could also choose specialty modules from the university offer, regardless of the department that the courses belonged to. The reaction of the students' communities and of the employers was very positive, and the new educational concept was declared to be an optimal variant of in-demand specialization, depending on the specificity of the preoccupations and the employment market requirement associated to each beneficiary of the system. However, this decision of modular restructuring directly affected the faculties, which found themselves faced with a new challenge to rethink the contents of the disciplines so that the variants included in the modular system may be accessible to anyone, regardless of their level of training.

An important pillar of the Twente entrepreneurial model was the compulsory large-scale introduction of information and communication technologies, for which enormous investments were made. To this end, the university collaborated with the organizations that had their offices in the

technology park situated nearby, in order to innovate the hardware and software in a controlled manner, insisting particularly on smart robot applications and assistance for the academic production processes. The management's strategy was to dislocate the entire academic offer and its ensemble of courses and place them above the physical space, so that they could take place preponderantly virtually and thus become accessible for any potential beneficiary.

Another component of this model was the stimulation of the *collegial entrepreneurship*, where the focus was on creating internal relationships between the teaching staff of the faculties and various departments, in order to generate and maintain common projects that would co-opt students and new graduates from various specializations.

The management strategy became directly dependent on the cooperation level of the academic community, considering the degree of the human resource involvement as essential. If we were to find a defining element for this entrepreneurial model, it would be *change-oriented mentality*, open to challenges, but equally concerned with stability.

The need of this system, as can in fact be seen in the tendency of all the above mentioned entrepreneurial universities, is to establish a balance between the centralized or decentralized *control function*, to apply concentrated entrepreneurial reforms in one single department and to implement comprehensive strategies in order to stimulate and activate the resources of the entire organization.

7. The Joensuu entrepreneurial university model

The model of the University of Joensuu comes from Finland, from an apparently insignificant institution, located in a region estranged from industrial or touristic advantages, a few hundred kilometres away from Helsinki, close to the Russian border. We believe the knowledge of this system may be useful, as it has extended over a generous length of time that enables us to analyze its progress, starting from the profile of an organization that was very poorly administered and reaching a prosperous and internationally visible entity.

At the beginning of their activity, the mission of the University of Joensuu was to prepare future teaching staff and to offer qualifications to young people without financial potential who lived in the area, preponderantly

in *social sciences*. Behaving more like a high school than like a higher education institution, the first managerial leap in raising the institution to university level was to restructure the curriculum and to extend the range of the specializations offered, as well as to fulfil the administrative structure criteria specific to this level of study.

The next step, which is in fact indispensable for universities, was to build a context in which the applied research could take place. To this end it was vital to identify sponsors for the financing of the actions defined in the research intentions. Not being an institution of the highest rank, the political and ministerial support was insignificant, so that the university resorted to local sponsors.

These related departments were poles of development for a long period of time, until a new subject area was inaugurated. This new faculty was a surprise for the community and the ministerial authorities due to the specialization that was quite remote from the scientific orientation of the university: Silviculture. The idea of introducing a new major subject relied on reasons that were almost exclusively commercial, as the institution depended entirely on external sources of income.

This field of study was very necessary for the population in the area, of which a large part worked on the forestry market. Thus, the students' number increased significantly within a few years, attracting beneficiaries from outside the country as well.

As an effect of this important success, the University of Joensuu became the most important Finnish centre of advanced research in silviculture and a highly regarded institution worldwide.

However, with the financial evolution came increasing responsibilities and the need to decentralize the investments according to departments, as seen in the previous entrepreneurial models. Having attained financial prosperity, the university opened doctoral schools, which, due to its geographical position, proved to be quite interesting also for the Russian population living close to the borders.

The entrepreneurial pattern of this university was the development of major subjects with practical relevance to the community, an aspect that favoured the appearance of advanced research in a new field of science, while the initiation of regional industrial cooperation propelled the university's educational offer to a more attractive position by means of the opportunities

that it offered. Subsequently, in more distant regions, business and research initiatives appeared that were connected to the resources of the University of Joensuu – actions that in the course of time transformed into branches with an equally significant financial power.

The conclusion was reached that the optimal entrepreneurial dynamics is given by the concomitant regional-national-international relevance and that the challenge lies in identifying and meeting the needs of every community.

8. The Chalmers entrepreneurial university model

The Chalmers University in Sweden counted on transdisciplinary modules and on building entrepreneurial centres in collaboration with other universities in the country, thus activating a network with multiple benefits for the academic community (common projects, students' contests, conferences, and debates, etc.). The regional administrations took advantage of the emergence of these university networks, encouraging the opening of branches in several towns in Sweden and requiring that the industrial sector in the respective areas be co-opted. A beneficial effect of the existence of national collaboration agreements was the achievement of large-scale credibility and the adherence to international consortia with whose help they accessed European funds and implemented over 100 projects of cross-border research.

Another point considered favourable to the implementation of the Chalmers entrepreneurial model was the responsibility and the power of decision offered to the students' consortia, who were included in the administrative and curricular management teams and took active part in the innovation projects.

In terms of financial accumulations, the Chalmers model had more visible results after the infrastructure was increased and innovated. The financial resources were generated preponderantly by their own organizations, created according to the model of small companies affiliated to the faculties, which the university used for research as well as for selling the academic products. The international visibility supported by the university social networks attracted a larger number of students, researchers, and teaching staff, so that the financial flows stemming from tuition and participation fees for contests and conferences increased visibly.

The managerial-entrepreneurial mentality pursued, to a large extent, the same decentralization model of the authority and responsibility for

investments as the other analyzed universities. The key of the progress lay in the dynamics of the *decentralized leadership* and the employment of inter-collegial relationships to reach transdisciplinary collaborations.

We noticed in all the analyzed models that the entrepreneurial university management capitalized on the traditional academic values, on the one hand in order to maintain expertise and the identity, and on the other hand in order to determine a proactive attitude within the academic community.

The idea of the university entrepreneurship maintains at its centre the *academic tradition* which it tries to promote in other ways, determining on an almost personal level a *desire for satisfaction and relevance* through which each participant in the system (teaching staff member, researcher, student) is determined to become modern, accessible, and open to collaboration. A combination is thus generated between traditional science, communication, modern marketing, and new systems of thought able to present new scientific subjects meant to attract a large number of beneficiaries.

The establishment of the interdisciplinary centres, by means of which several science fields are co-opted and determined to mingle so as to generate new disciplines and specializations is another element that belongs to the entrepreneurial models. All the researched models made their transition to innovation progressively, maintaining and capitalizing on the scientific balance and the traditional norms.

9. Conclusions

The analysis of the entrepreneurial managerial models implemented in universities has outlined a range of coordinates that come to complement the profile of this administrative concept which is still quite fresh and only generally defined by the literature. Synthesizing the outcomes achieved by each of the institutions that we presented, a series of main elements can be identified that define the ‘entrepreneurial style university management’, such as:

- Centring the institution’s functionality on increasing the beneficiaries’ satisfaction,
- Supporting the transfer of knowledge towards the employment market by intensifying cooperation with entities and companies specialized in the fields of study offered by the university

- Increasing the educational relevance so that the university becomes a pillar with maximal utility for the job sector.

Based on these pillars, each model highlighted a range of vulnerabilities due of which the institutions cannot attain the desired degree of entrepreneurial efficiency. We approached the issue of the infrastructure needed for teaching and research, which should at all times benefit from modern, state-of-the-art options, including the digitalization of the university activity from the lowest level to the development of robotic assistance and artificial intelligence components.

The decision to transform the university management into an entrepreneurial system requires first and foremost that the institution changes its orientation towards innovation. In our case, the reorientation includes the adoption of elements from the external environment in order to lay the foundations of the relationship and of the transfer between the school and the employment market. Thus, in concrete terms, they propose an education centred on the beneficiaries' needs , who are free to choose a scientific training that will be appropriate for their future jobs – jobs that they can actually test while studying for their degrees. In line with this orientation, the large majority of the British universities have implemented the modular system that enables students to receive a personalized education, in accord with the training requirements that they discover while doing traineeships. An additional component with an important role in assisting the entrepreneurial management of universities is the support offered to *start-ups* dedicated to the academic community, which not only offer opportunities to practice business abilities, but also secure relationships that may be beneficial to the scientific project and attract external funds that may be reinvested in projects extended at the entire institution's level.

The role of the entrepreneurial university is to be 'a lifelong educator', an adapted, flexible, and economically relevant provider of high-quality changes. An entrepreneurial university is interested in its alumni's insertion on the employment market and is open to changes that give priority to the needs of the beneficiary and of the community, and to the usefulness of its scientific domains for the progress of society.

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