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THE TRIAD RESEARCH UNIVERSITY MODEL OR A POST 20TH CENTURY RESEARCH UNIVERSITY MODEL

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UNIVERSITY EDUCATION AND HUMAN RESOURCES

The Triad Research University Model or a Post 20th Century Research University Model

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Abstract

In this paper a model for the future research university is proposed, which answers some of the key challenges facing universities. It consists of three independent yet closely knitted entities: a research institute, a university teaching college and a business unit creating a “triad” structure. The possible inevitability, the advantages and disadvantages of the model are discussed.

The Expiring Social Contract

Historically and throughout the 20th Century, universities have successfully adjusted to the challenges posed by changing times while retaining their autonomy. They have succeeded in doing so because they proved themselves to be useful to society, but not crucially important to it; because they served the interests of the powerful elite without threatening their authority; because for decades they have been allowed to massify, and the higher education system to diversify, with relatively little financial constraints and thus they responded forcefully and in time to popular demand and political needs, respectively, and because in crisis, confrontation and war they served their respective national defense needs effectively. And finally, from the 19th Century on universities became the ideal and natural setting for scientific progress, and since World War II for the technological development, which served and advanced national economies.

Consequently, an unwritten ‘social contract’ evolved between universities and society, whereby universities were permitted to continue their millennium old right to certify knowledge, grant degrees, determine the curricula, conduct research protected by “academic freedom”, and manage their affairs with remarkable autonomy and self rule.

However, it appears that this social contract may now expire, and that universities, for the first time in their evolution, are facing serious challenges that will force them to reconsider their traditional paradigm and renegotiate a new social contract. Thus, the universities are facing not only new challenges but also an existential crisis.

The Underlying Processes Driving the Change

The five primary processes driving the above developments can be identified in the following:

(a) Over the course of the 20th Century and particularly during its closing decades, research universities assumed responsibility for much of the science-technology research which drove the world's post-industrial based economies. They did so, however, at an exponentially spiraling cost, rendering them both far too important for the economy and far too costly for the government to be able to avoid aggressive governmental and political intervention¹.

(b) In addition to new knowledge, sophisticated, modern post-industrial societies require an increasingly broad base of highly educated human resources in a diversity of fields. The universities, in addition to science-technology research, supply a good portion of these human resources, rendering the higher education system an even more crucial element in feeding the economic engines of nations². Yet, because universities are directly or indirectly funded

¹ Note that the emergence of science-technology as an indistinguishable entity is the product and inevitable consequence of the fusion of the four-century long science revolution and the two-century long modern technology revolution, into a new powerful *science-technology* revolution. This new revolution, which was ignited in the last quarter of the 20th Century, is the alma mater of all high technology. It blurred the distinction between science and technology and between basic research and applied research, so that both are now being carried out simultaneously at research universities. A further consequence of the new science-technology revolution is the emergence of the global interconnected world and the new knowledge-based economy.

² Indeed Clark Kerr (*The Uses of the University*, (4th Ed.), Harvard University Press, Cambridge, Mass. 1995) in re-examining the research university scene, expresses guarded optimism, which stems from the role of the research university in increasing the productivity of the economy by advances in knowledge, “*particularly in the areas of usable energy, new materials, biotechnology, and further exportation of the possibilities of electronic technology*”. One thing is almost certain he adds, “*and that is that the research university, with its combination of knowledge and higher skills, will become increasingly important to the maintenance, and possible improvements in society.*” And, Derek Bok (*Universities and the Future of America*, Duke University Press, 1990) suggests that the most

by governments, this combination of great societal importance and heavy public funding once again invites governmental intervention and control.

(c) In modern society, post secondary education in general, and university education in particular, increasingly became the primary means for personal upward mobility, as well as the creation of a more just and equal multiethnic and multiracial society. This naturally led to increasing public pressure for easily accessible and affordable university education, political and juridical intervention into university enrollment and hiring practices, as well as curricular policies and affirmative action policies, affecting both autonomy and finances.

(d) The higher education 'business', made global by modern information technology, is becoming a lucrative market, significant enough in size to attract serious for-profit ventures³, and induce corporations that already spend annually some \$60B for in-house education, to branch out and sell their product⁴.

(e) The total public expenditure for higher education and university research has reached a scale that invites public debate and political scrutiny, which invariably lead to questions regarding the efficiency, governance, organization and running of the universities in particular and higher education systems in general, and to demands for justifying the spending in view of alternative public needs.

compelling arguments that are put forward on behalf of the research university are related to their contribution to new discoveries and highly skilled education, *"through these developments, we have come to recognize that all advanced nations depend increasingly on three critical elements: new discoveries, highly trained personnel, and expert knowledge. In America, universities are primarily responsible for supplying two of these ingredients and are a major source for the third"*. That is why different observers *"have described the modern university as the central institution in postindustrial society"*.

³ A Venture Capital study reports as follows: "As a result we believe education represents the most fertile new market for investors in many years. It has the combination of large size (like healthcare) disgruntled users, low utilization of technology, and the highest strategic importance of any activity in which this country engages... Finally, existing managers are sleepy after years of monopoly". Examples of for-profit universities traded on the stock markets are: Apollo Group Inc., Career Education Corp, Corinthian Colleges Inc., DeVry Inc., Education Management Corp., ITT Educational Services Inc., Strayer Education Inc., Sylvan Learning Systems., University of Phoenix On Line, and Whitman Education Group. (The Chronicle of Higher Education, February 14, 2003.)

⁴ Examples of such ventures are Motorola University and Dell University.

The Response of Universities

In the face of these forces which stand to make significant impact on the universities and negate their social contract, universities and the professoriate that controls them responded only minimally, triggering social critics such as Peter Drucker⁵ to state: *“Thirty years from now the big university campuses will be relics. Universities won’t survive. It is as large a change as when we first got the printed book”*, and James J. Duderstadt, former President of the University of Michigan⁶: *“over the horizon there may be a tsunami of market forces, sweeping toward higher education, capable of driving a massive restructuring of the higher education enterprise”*. These forces may be capable of breaking universities’ monopoly on certifying knowledge either formally or informally, as society is offered, and embraces worthy alternatives⁷.

Why do universities and their professoriate face these powerful forces and sweeping changes, apparently with such little concern? Surely there are many reasons for, but I believe it is mainly the result of a deeply embedded institutional, academic culture.

First, and paradoxically, it is past success that hampers universities from appropriate reaction. Their unqualified success in responding to challenges and demands that society has presented them over the course of the 20th Century⁸, leads to complacency and the assumption that new challenges will be met as easily as the old ones.

Second, universities and the professoriate fail to realize that by-and-large, and until recently, because they responded to the foregoing challenges, they have received ever-increasing public

⁵ Robert Lenzer and Stephen S. Johnson “Seeing Things as they Really Are”, Peter Drucker interview, *Forbes* 159, 122-28 (1997).

⁶ James J. Duderstadt, “A University for the 21st Century”, The University of Michigan Press, Ann Arbor, 2000.

⁷ Steve Balmer, Chief Executive Officer of Microsoft launched the Microsoft IT Academy Program in London. Colleges and universities were invited to join and offer programs certified by Microsoft and it is this certification by the vendor that makes it attractive to students; whereas, the colleges and universities are merely service providers. C. Davies, *Higher Education Times Supplement*, September 27, 2002.

⁸ Among other demands and challenges placed upon them by society, universities adopted scientific research, which led to unprecedented progress, and to their growth as mass educational institutions providing education to “baby boomers, women and minorities. Furthermore, the adoption of engineering research led to waves of technological progress.

funding, to the point where universities and the professoriate perceive the “state of continuing growth” as the natural state of affairs. In fact, the professoriate dominating the current university scene is largely comprised of faculty who received their graduate education in the 1960’s and 1970’s during the peak of the growth period often referred to as the “golden age” of the research university. They may continue to perceive the ‘ever growing university’ as the “ideal university model” to be retained and emulated. Indeed, university managements often have scarce knowledge and experience in managing universities as stable, mature on-going enterprises, let alone coping with financial crises.

Third, there is a deep-seated and cherished university culture that views the university as a “community of scholars”, and that the role of management is to protect the faculty from external forces and upheavals. This attitude also transfers individual responsibility to a vague communal responsibility that does not demand individual decision or action. This state of affairs is compatible with the prevalent institutional culture that replaces campus loyalty and responsibility with loyalty to worldwide peers of the “invisible college”.

Finally, university management positions are generally filled by faculty for relatively short periods of time, and are considered as an undesirable, somewhat degrading but necessary ‘service’ to the academic community, which is followed by a welcome return to the “real” world of academic activity, the only true source in academia for peer respect and praise⁹.

⁹ Just consider the closing words of advice from the older, cynical, academic politician to the aspiring young scholar wishing to enter academic politics, in F.M. Cornford 1908 classic satire “Microsmographia Academica”: *“But if you find that I was right, remember that other world, within the microcosm, the silent, reasonable world, where the only action is thought, and thought is free of fear. ... and if you have any spark of imagination and try very hard to remember what it was like to be young, there is no reason why your brains should ever get wooly, or anyone should wish you out of the way.”*

Challenges

In order for universities to advance a new social contract, they will need to meet a long list of new challenges, answer some fundamental questions about themselves, their role in society and their vision, and restructure themselves accordingly. Here are three important challenges from the many facing the universities.

The Broken Core

The notion that “shared educational values results in a harmonious society” still holds true today as it has for centuries, yet in modern multicultural societies, it is becoming increasingly difficult to define what exactly those shared educational values are? Consequently, and inevitably, the traditional core curricula of universities are being deconstructed into an incoherent assembly of courses and experiences. In addition, the ascent of science as the central theme of the modern research university has placed humanities, which have traditionally provided much of the core, on the defensive. Moreover, trying to emulate the success of the sciences, they themselves slipped into quasi-scientific specializations, which were counterproductive to their traditional cohesive educational role, and unlike the sciences and engineering, yielding far less perceptible benefits to either their discipline or to the society. Finally, the large and diversified student body in universities increasingly demands from the university value for their money expecting to improve their chances in the job-market. This has led to the ‘professionalization’ of university education at the expense of traditional ‘liberal’ education, which stresses core values, which was meant to shape the character of the children of the elites.

The disappearance of the traditional core is partly responsible for the inability of the university to define what exactly its “core business” is. However, it appears that there is little point in lamenting the disappearance of the traditional core, as so many have done since Allan Blum’s “Closing of the American Mind”. Rather, this should be seen as a critical opportunity for universities to redefine their educational mission in alternative, modern terms and make the appropriate structural adjustment, as recently suggested by Duderstadt (op. cit).

Research, Teaching and Broken, Implicit Contracts

With the powerful ascent of sciences on the university scene, not only has the academic core been broken, but teaching itself, which has always been central to education, has slipped into a secondary role.

The ascent of science on the university scene was a gradual process and took place over a couple of centuries, but clearly the success of the sciences in the war effort in WWII signaled the turning point to an exponentially accelerated process. This success triggered Vannevar Bush's report to the US Government "Science the Endless Frontier" calling for significant governmental support for scientific research at the universities. The ensuing massive public funding of the exact sciences and engineering, driven by superpower confrontational defense needs, was accepted as the new parading on the university scene. This, however, has profoundly changed the academic scene, claim Kennedy and Katz¹⁰. According to them, it has broken the implicit contract between the professoriate and the university, and between the universities and students and parents. This happened, the authors suggest, because it placed teaching and research in conflict, thereby altering the disciplinary balance of the academic programs; increasing the significance of science versus humanities and accelerating and polarizing social stratification among faculty. This paradigm shift also changed the nature of the professoriate and academic workforce, because universities came to value research above all, and grantsmanship more than institutional loyalty. Thus the implied contract between the professoriate and the university was redefined. And, consequently, undergraduate education was damaged by the alienation of students, parents and alumni from what they perceived as values that make an institution great. Finally, this process it inevitably led to the phenomena of academic technology transfer and "academic entrepreneurship", which encompass some of the most difficult ethical and practical pitfall that universities have ever had to face and must yet learn to cope with.

These are, of course, the detrimental side effects of the role science played on the university scene. However, they were the inevitable side effects of a tremendously positive and useful process. Moreover, the response to the drawbacks must come not by rejecting science and returning to an unattainable past paradigm, as some may wish, but rather by reconsidering the complex role the university in light of these changes, and find a way to recapture some of the old values without losing the new ones.

¹⁰ Wayne Kennedy and R.N.Katz, Integrity of the Research University, *SRA Journal*, Commentary Summer 1995.

The Mass Access Dilemma

Universities in the United States as well as in Europe responded with enthusiasm to the public demand for wide access (and in Europe for free tuition and student and employee participation in university governance). They have grown into what Clark Kerr calls 'multiuniversities', providing university education to increasing numbers of women, minorities and underprivileged groups, who were underrepresented in university education, with the accompanying consequences on the core curricula. Moreover, the higher education system as a whole has diversified into a broad range of higher educational institutions, to the point that the accepted norm today appears to be that obtaining a post secondary education in his/her chosen discipline is included among an individual's civil rights. The economic justification for this can be found in studies indicating a clear-cut, positive correlation between years of education, personal income and national GDP.

However, triggered by the high cost of publicly funded education, dissent is growing on this issue. Economists are raising serious questions on whether mass access to higher education is a private good or a public good, with the consequent implication as to who should bear its cost. Some educators, like Alison Wolf¹¹, claim not only that more education serves the individual who should bear the cost, but that additional tertiary education may not mean more economic growth but possibly less, because the growing tertiary education segment depletes secondary education of qualified teachers and damages research universities by absorbing part of their budget.

This issue is a public challenge more than a university challenge that merits educated debate, since its conclusion will profoundly affect the society.

The Post 20th Century Unbundled -the *Triad Research University*

In view of the aforementioned developments in the university scene, the intensifying political process and public expectations, perhaps it is time to recognize that the classical research university model must evolve into new one which is more appropriate to the enfolding 21st Century. The current model assumes that the university as a whole and the faculty member as an individual are, respectively, expected to manage and carry out research, organize

¹¹ Alison Wolf, *Does Education Matter*, Penguin Books, 2001.

and practice teaching, manage technology transfer and apply scientific knowledge to industry¹².

The concept that research and teaching are twin and inseparable responsibilities of the faculty, that one cannot be properly practiced without the other, is deeply embedded into university tradition and ideal¹³. Furthermore, with the emergence of high-technology over last decade, many faculty, in particular in scientific technological research universities and in colleges of science and engineering in comprehensive research universities, are institutionally encouraged and personally driven by the expectation of great financial windfalls, to put the fruits of their research to industrial practice, either by entrepreneurial activity or licensing.

The notion of the interdependence of research and teaching that most of us have subscribed to, with all its beauty and logic seems to have perfectly fit a bygone era. However, it no longer seems to correspond to today's very high cost, complex, multidisciplinary, and group-rather-than-individual research environment. To put it somewhat bluntly, modern scientific research on the university scene, certainly in exact sciences and engineering, has become too complex, too costly, and too important for part-time activity. Its serious pursuit, and the moral accountability to the agencies funding this costly research, requires full time dedication. Moreover, the multiple mission concept places an unreasonably heavy load on young faculty in particular¹⁴. Finally, the management of research, the pursuit of research funding, and the

¹² This multiple mission of the research university was embedded in the ideology of the modern university. For example, Karl Jasper (*The Idea of the University*, Peter Owen, London 1960) defines a university as: "a community of scholars and students engaged in the task of seeking truth"... "it is simultaneously a professional school, cultural center and research institute. These are indivisibly united. One can not be cut off from the others without destroying the intellectual substance of the whole enterprise."

¹³ The comment: "Research to teaching is like sin to confession; unless you participate in the former, you have very little to say in the latter!" attributed to John Slaughter, President Emeritus of Occidental College, illustrates rather nicely this shared feeling in academia.

¹⁴ See for example Robert L. Geiger's comment in *Differentiation, Hierarchy, and Diversity: An Overview of Higher Education in the United States*, in *Trends in American & German Higher Education*, ed. Robert McAdams, American Academy of Arts and Sciences 2002: "A third source of concern, more internal to universities, is that heightened expectations placed on junior faculty - to establish proven research agenda and excel in classroom teaching - have generated dysfunctional pressure on those beginning academic careers."

protection of IP, have also become too sophisticated for the somewhat amateurish partial attention of most university managements. This too requires full attention on a presidential level.

Taking into account a non-defined, *core*-less curriculum, the internet age, and the technology rich and student-demanding environment, teaching cannot continue as a second class activity practiced by the same millennia old methodology, as is the case in most research universities, where academic pecking order is exclusively determined by research accomplishments. In fact teaching must be viewed as the, central, if not full time, activity of those who practice it, and certainly to those who manage and lead it.

Finally, technology transfer, and commercial development are very difficult and complex activities which take place in a highly competitive environment, and need to be addressed by professionals who are capable and experienced to operate in a free market environment dominated by very talented and sophisticated people.

Each and every one of these activities are practiced today by the same university management and many of the same individual faculty members, yet each of them requires not only full time attention and dedication, but also a different *mindset*. Therefore, perhaps it is time to seriously consider 'unbundling' the package, and not just superficially, by uncomfortable and damaging compromises such as token teaching or token research, and below-presidential-level managerial assignments, but unbundling to the core.

Such a process, when carried to its reasonable conclusion, will create a university structure that can be termed the *Triad Research University*, consisting of three independent yet closely connected entities: the *Research Institute*, the *Teaching College* and the *Business Unit*, each headed by a President/CEO and having an appropriate management structure. A Chancellor and appropriate staff will head the Triad university complex as a whole¹⁵.

The individual faculty member, at any time, will belong to a single unit of the *Triad*, with voluntary and part time association with

¹⁵ The relationship between the three units and the core complex could be modeled along the lines developed by the University of California where the Chancellors run their universities and report to the President of the UC system.

any other unit. Faculty members' performances in their primary unit will determine their promotion, success, and peer appreciation by colleagues carrying out the same kind of activities. They can move from one unit to another temporarily or permanently or be partially affiliated with another unit, provided the new host unit requests or approves such a move. Graduate students, and in particular doctoral students, will be supervised by joint Research Institute -Teaching College committees.

With faculty and management dedicated to a single task in each of the units, and faculty performance evaluated in that unit, more efficient and better performance is to be anticipated. Teaching will no longer be a secondary and inferior activity for those who are members of the *Teaching College*, but it will be their primary responsibility. Yet, by partial affiliation or a periodic stay in the *Research Institute*, they will maintain a connection with, though not necessarily a leading position in, cutting edge research. Moreover, a *Teaching College* faculty in both sciences and humanities, with the primary responsibility of transferring knowledge and wisdom, and shaping the character of future generations, will surely be able to formulate the core values of a civilized people based on overarching human values. A core curriculum, which should help shape generations of students accomplish an educational goal leading to intellectual integrity, was beautifully expressed by Hanna Gray¹⁶ as the achievement of "*critical and independent judgment, respect for evidence, openness of other points of view, tolerance of complexity and uncertainty, willingness to undertake reexamination and to suspend final conclusion, patience with rigorous and painful analysis, refusal to bend to the fashionable and comfortable, insistence on reasoned explanation*".

In addition to the education and teaching of students, the *Teaching College*, assisted by faculty from the other units, will be charged with the responsibility of continuing and adult education. This task is often neglected by universities because, somehow, it was skipped over when defining their primary responsibilities. But, life-long education has now become an inescapable necessity, and universities must assume the responsibility for it.

In the *Research Institute* modern multidisciplinary research can be pursued without the artificial barriers, impediments, and competing interests that traditionally exist between departments,

¹⁶ Chapter 12 in H.Shapiro *On History of Giants*, Princeton University Press, 2001.

schools, and colleges¹⁷ and benefit from the *networking* of different individuals and disciplines to solve problems that cannot be solved by any single individual or any single discipline¹⁸. Yet, periodic or part-time affiliation with the *Teaching College* will keep the researchers in touch with the students through the practice of the ancient activity of teaching, which also helps in crystallizing and systematizing the accumulated knowledge.

Finally, when scientific research ideas bear fruit and can be put into practice, this will be handled within the *Business Unit*. This growing activity within current university environments creates almost insurmountable dilemmas: conflicts of interest¹⁹, misuse of graduate students, confusion between pursuit of knowledge for enhancing human understanding and the desire to see an idea take shape and form, the human desire to get wealthy, and university presidents' eternal desire to balance their budgets. Moreover, the growing entrepreneurial activity on campuses creates a new type of inequality, which is foreign to university traditions and subverts its values. University faculty traditionally welcomes inequality in their midst, if the inequality is based on exceptional intellectual accomplishments in breaking new knowledge or truly great teaching, but certainly not an inequality based on making money. Removing technology transfer to a separate unit, with appropriate professional support, will resolve these dilemmas. Moreover, over time, a special breed of faculty may evolve, who have the skills and commercial knowledge to support their colleagues who are not as commercially savvy. They will scout the university at large for commercially viable ideas in the embryonic stage and nurture them through the commercial development process.

Some believe that universities should stay away from commercial activity altogether. This is a lofty desire, but the reality of the foregoing fusion of science and technology into an indistinguishable entity and the on-going scientific-technological revolution that, makes it impossible not to stumble at ever-increasing frequency over applicable research ideas. This is the nature of the science-technology fusion, and it is the responsibility

¹⁷ See for example W.Robert Oconnor "Why We Need Independent Centers for Advanced Studies" *The Chronicle of Higher Education* Section 2, January 7, 2003, who views such discipline-crossing institutes as a new stage in the creation of knowledge.

¹⁸ D.J.Watts, "Unraveling the Mysteries of the Connected Age" *The nicle of Higher Education*" February 14, 2003 p.B7.

¹⁹ "Increasing commercialization and conflict of interest are – Siamese twins" suggests Henry Rosovski in his essay "No Ivory Tower: University and Society in the Twenty-First Century"

of the university funded by society to bring these ideas to fruition for society, particularly because industry separated from academia cannot accomplish it²⁰, at least not in the initial stages.

The transition from the traditional research university model²¹ to a *Triad Research University* model is not a simple task and, if it will ever happen, it will take time. Perhaps, factors including the desire to rid ourselves of poor teaching, and mundane research resulting in a myriad of mediocre papers that clutter the research journals, and the wasted potential of quasi-amateurish entrepreneurial activity, may serve to catalyze the process.

Finally, we should recall that the modern American Research University model discussed in this paper, and emulated all over the world, is in fact an amalgam of three separate university models, the *German Research University*, the *English Teaching University* and the *Scottish more Pragmatic University* models. The *Triad Research University* concept merely and partially segregates this amalgam into its constituent elements, yet it retains interactive beneficial proximity among them. It is a model for a *possible* future research university that many of us in academia may perhaps not yearn for, but it is one that reality and great external and internal forces may forge.

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²⁰ Yet, universities should be aware of the possibility that industry and government will begin viewing this activity as 'unfair competition' and 'taxable commercial income', respectively.

²¹ It should be noted that the current research university mixed research/teaching model is not the only research/higher education model. In several countries, among them Germany, France, Russia and China for example, almost all basic research is carried out in Research Academies with only doctoral students. Yet, their separation from generations of young students is a great disadvantage.