From Form to Content – "Bologna" as a Quality Reform

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1. Starting Point

The political goals of the Bologna Declaration are well known. I do not argue against the underlying architecture or bureaucratic standardizations introduced with the following elements of the Declaration. One may of course discuss if the Declaration does not contain some sort of hidden egalitarian philosophy, but my main argument is just the other way round: I belief that the Bologna process offers important opportunities to *redesign higher education* – to reengineer universities – by combining the formal implementation with an autonomous quality reform.

While I will present a specific understanding of the Bologna process, I am not denying the necessity of transparency and mobility. Openness is a major characteristic of today's universities. Therefore, the level playing field cannot be defined by governments alone: there is the scientific community (which is international at least since the Encyclopaedists), and there are trends following globalization (e.g. a new understanding of innovation). Higher education faces important changes due to new constraints on several levels - technologically, economically, and socially:

a) National economies depend more on and benefit from external factors; the share of international exchange, including in knowledge and intangibles, is growing.

b) The mobility of production factors, people and know-how, is growing as well, but there are countervailing forces (e.g. protectionism, re-industrialization), sometimes in a rather eruptive form.

c) In many cases, this openness calls for new and better regulation (the disruption of the financial sector is a prominent one); institutions like the WTO, the IMF, and many supranational arrangements have to be rethought.

d) Models of liberalization and deregulation are introduced both in the public sector and for public infrastructure; as a direct or indirect consequence of these policy changes, the autonomy of universities has been reviewed and, especially in Western Europe, their mandate has been re-focused.

One may discuss if the post industrial society is converging into a knowledge society[1]. But R&D and the innovation process must be seen as key factors for competitiveness and – as many believe – for

[1] *OECD*, 1996, The Knowledge-based Economy, Paris

sustainability. In a global struggle between brands, firms, and sites, the character of knowledge generation and distribution have changed remarkably. New, specialized ways of innovation are being explored, e.g. by creating start-ups and spin-offs or by industrial insourcing instead of the traditional technology transfer[2] [3]. A new industry has been created, aiming for innovation as a product per se as knowledge has become commodified. But it seems that "knowledge taylorism" (as I would call it) has come to a certain halt. There are growing doubts if innovation can be just organized and reproduced in an analogous fashion to industrial processes[4].

As a result, the traditional role of the university and higher education gets under pressure. There is not only a new understanding of the way knowledge is produced[5] but also a growing concern regarding the university's mission statement. "*L'université n'est pas une usine à gaz!*", a Swiss university president recently exclaimed. It seems thus that a competitive redefinition of portfolios and curricula is the only way universities can manage this situation. There is no Best Practice, no ideal mix of disciplines and skills or no riskless anticipation of future hot issues.

2. University's Role

Commodified knowledge implies that intellectual property (IP) shares many of the characteristics of a commodity. It plays an important role in today's economic policy, and there are new forms of protectionism and governmental actions to control the use of domestically produced knowledge. WTO's TRIPS and TRIMS, as examples, define rules balancing the interests of producers and consumers of know-how in a global, trade-driven environment.

The battle of universities for third party money and especially its promotion of contract research produce a "leakage problem". Faculties and institutes are facing the daily IP dilemma: *publication* of the scientific resultants versus *waiting* until the industrial client has checked the usefulness. Of course, there are formal practices how to deal with such cases – how to follow a coherent patent and licensing policy. But the *general* phenomenon is still worth to be discussed. Where and to whom does the university's knowledge production disappear? It is not sponsoring or contract research, but the weight of different product lines that is the key point here.

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[2] *J. Kim, G. Marschke*, 2007, How much U.S. technological Innovation Begins in Universities?, Federal Reserve Bank of Cleveland, April 15, 2007

[3] *D.S. Bieri*, 2007, Booming Bohemia? Evidence from the U.S. high-technology industry, Preprint to Econ 4956

[4] *S.W. Bieri*, 2003, Regionalökonomie und Keynesianismus als Geschwister? in: P. Gugler, R. Ratti (eds.), L'espace économique mondial et régional en mutation, Zürich, pp. 41-59

[5] *M. Gibbons, C. Limoges, H. Novotny, S. Schwartzman, P. Scott, M. Trow*, 1994, The new production of knowledge, London, Thousand Oaks, New Delhi, pp. 111-128

At least in a European context, things seem to be rather clear. Higher education and R&D are complementary goods, and without a dominant research drive no university can survive. By selling R&D over the market and to nonmarket institutions, much needed feed-backs and relevance checks can be made. But higher education still is the core business – the "*raison d'être*". Its great advantage consists of the knowledge transport via *persons* – a long lasting, subtle process with an important societal impact.

But this is precisely where the strategic function of Bologna enters the scene. The new form of organizing the curriculum offers a distinctive way of retailing which is close to consumption. Of course, mobility should not be seen as a goal per se, but as an effect of the quality of the supply. Then internationalization is a great opportunity for proactive universities. It gives internal students an opportunity to gain international experience and attracts a larger number of gifted students from abroad to the campus. The focus clearly lies on Master and PhD courses (integrated within competitive graduate schools); there, a unique mix of learning and doing research defines the specific profile. Knowledge production is dominated by teams.[6] Rather than undertaking a widespread, undifferentiated promotion of Master and PhD programs, universities should concentrate their efforts towards well-prepared partner institutions and realistically defined global regions. Furthermore, not every university is able to recruit students from India, Brazil or Finland and to draw in professors from US Ivy League institutions at the same time.

Graduate schools are the place where things happen: top-edge science surrounded by different forms of higher education – lectures, seminars, studios, and discussions at the labs. As we know, computational science reflects a new scientific paradigm, which mainly consists of the introduction of simulation as an additional step between theory-making and testing. This approach is highly valuable for graduate teaching too, bridging abstract knowledge and application. From there, professors and students are in a better position to explore the field where successful combinations of learning and research takes place.

3. Understanding the Process Model

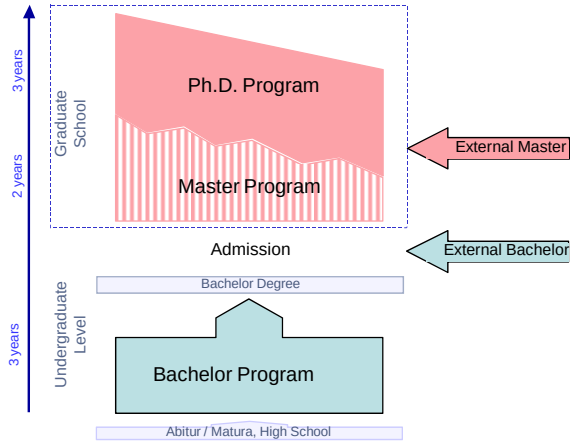
Bologna is first and foremost a process model – a purely formal way of structuring and linking programs. Picture 1 defines the three levels (Bachelor, Master, and PhD) and its inflows and outflows. This *openness* was and still is the political goal of the reform. It is the corner stone of a "free trade system" where students are shopping for modules. Formally, universities define their offer, combine modules to programs, and – not to forget – attach a price-tag to each module ("credits", ETCS).

So far, so good. The process model as such is a neutral set of rules enabling student flows both vertically and horizontally. The structuring of programs may be defined as distribution-oriented: consumers know that they are buying formally identical packages. But what is *inside* the box? Over the years, I have been privy to many a heated internal discussion and have followed more or less frustrated debates in Parliament: there simply is no common denominator - there is no natural "Bologna currency" for

[6] *S. Wuchty, B.F. Jones, B. Uzzi*, 2007, The Increasing Dominance of Teams in Production of Knowledge, Science, Vol. 316, No 5827, pp.1036-1039

exchange modules or grades. Consequently, inter-university agreements or bureaucratic regulations dictate how unrestricted mobility really is.

Picture 1: *The Bologna Process Model*

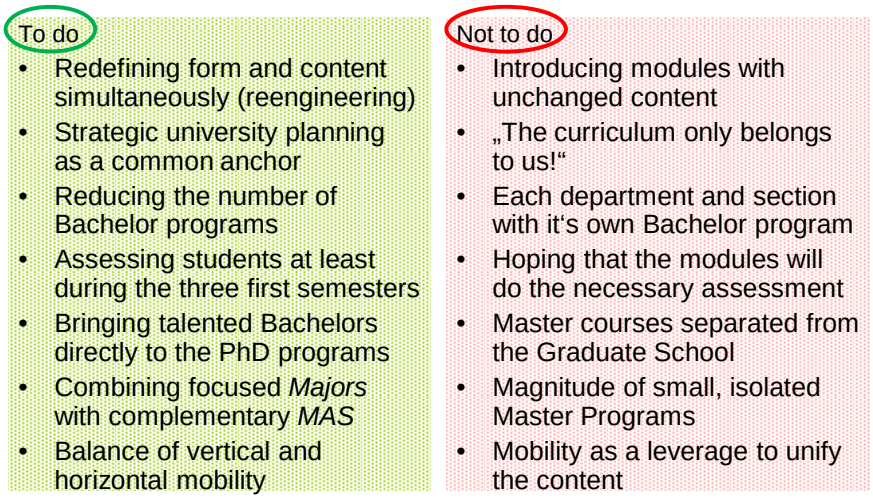


The idea of a Bologna quality reform implies the use of formal transformation as a scientific leverage[7]. Rebuilding a university's offering is a unique occasion to check its scientific orientation, the practical relevance of its products, the internal collaboration, and the resource allocation of programs. For that, the university has to tackle the *content*. Such an enterprise needs a blue-print, an original design that should be understood by presidents, deans, professors, and – of course – students. A lot of administrative, technical papers have been written to show how Bologna could be realized -- individually, within a specific group of universities or nationally. But less has been done to clarify what a stable Bachelor program in Life science could be, where the basic skills of a Master in Engineering should lie or how an intelligent collaboration of graduate schools in Social Sciences s might be oriented. Of course, there are positions pushed by powerful stakeholders or indirect influences of governmental regulation, (e.g. in Medicine, in law), but we all know that *above all* the internal discussion is decisive. A successful profile must be developed bottom-up. I will come back to this point later.

Picture 2 reproduces a checklist, mainly condensing personal experiences in the context of the introduction of Bologna. Of course, it reflects normative points and rather subjective assumptions.

[7] *S.W. Bieri*, 2005, Gestufte Ausbildung an Hochschulen: inhaltliche Fragen lassen sich nicht ausblenden, Die Volkswirtschaft, No 7/8, pp. 59-62

Picture 2: *A "Bologna" Checklist*



4. Building up a Profile

Introducing Bologna is, as I said, an opportunity to sharpen a university's profile. At the start of the process, neither the president nor the deans should try to please governmental bodies, professional organizations or specific clients that have been involved historically. Just let them get on with it.

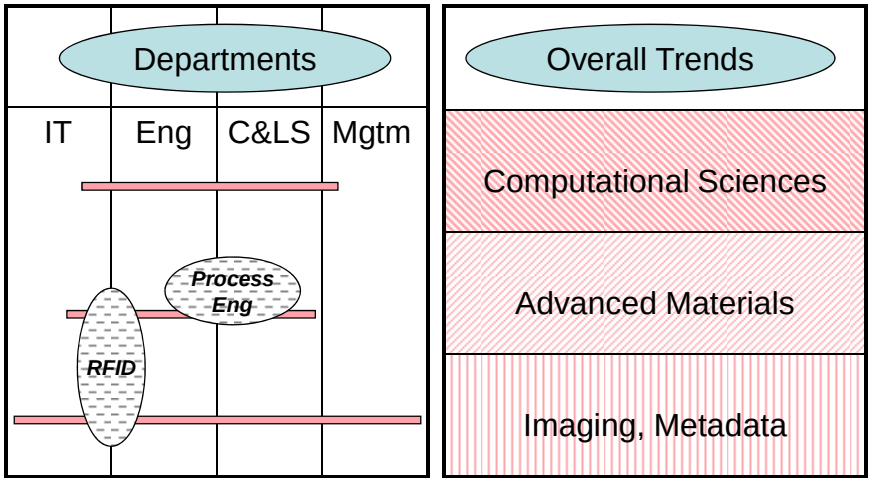
On the other hand, an early awareness of the resource situation is necessary. In most European and US cases funding is the bottleneck. Based on past experience, there is little evidence to suggest that government funding for higher education will increase sufficiently to enable an individual university to operate at a level of quality that exceeds the median. So a consequent internal reengineering can offer some flexibility needed.

I can hear the voices saying: Why should we complicate the process in such a way? My answer is very simple: If you don't catch it at the beginning of the process, you will have additional costs and irritation in the future. Bologna as quality reform anticipates a reshuffling of portfolio and budget. In a completly different context , Gropius formulated what I mean: " *Der Mensch besitzt die unzweifelhaften Möglichkeiten, seine Wohnung ausreichend und gut zu bauen, aber eigene Trägheit und sentimentales Hängen an der Vergangenheit hinderten ihn bisher an der Durchführung."* [8] When the Bauhaus started, its designers first asked the famous "what" and "for what purpose". If we compare a modern university with a building or with a plant, we understand that portfolio and curricula have to be changed according

[8] *W. Gropius*, 1924, Wohnhaus-Industrie, in: A. Meyer, Ein Versuchshaus des Bauhauses in Weimar, München: Langen Verlag, p. 5

to the evolution of science and technology within a specific environment. Picture 3 gives an example of the structural problem that needs to be solved internally.

Picture 3: *Reengineering the Plant*



The history of science shows us many examples how such changes take place – planned and unplanned. "I wanted to give up conventional biochemistry, which I believed incapable of telling us how genes work", Nobel Laureate Watson said and continued: "Instead I told them that I now knew that X-ray crystallography was the key to genetics."[9] From chemistry to physics and life science. For-front developments are occurring at intersections, today especially between computer science and biology. This has a profound impact on the development of science and technology. Such *interfaces* seem to be very productive spaces, and new, unexpected meeting places can be found all over the campus. Often, there is a leap from the application to the support and from there back to "pure" science. Infrastructures like Light Sources, MRI or Clean Rooms are able to produce their own theoretical contributions, being definitively more than just "accompanying" research or teaching.

So the university must be organized and managed in a way that enables *transversal cooperation*. There is - by the way - a similar entrepreneurial trend: some companies are learning how to take a more creative approach to *mobilizing resources*.[10] The university has to promote flexibility especially for those preparing Bologna modules or for those delivering important services to groups of students, e.g. PhD

[9] *J.D. Watson*, 1968, The Double Helix – The Structure of DNA, New York, Reprint 1996, p. 43

[10] *J.S. Brown, J. Hagel III*, 2005, From push to pull: The next frontier of innovation, The Mc Kinsey Quarterly, 2005 / 03, New York, pp. 82-91

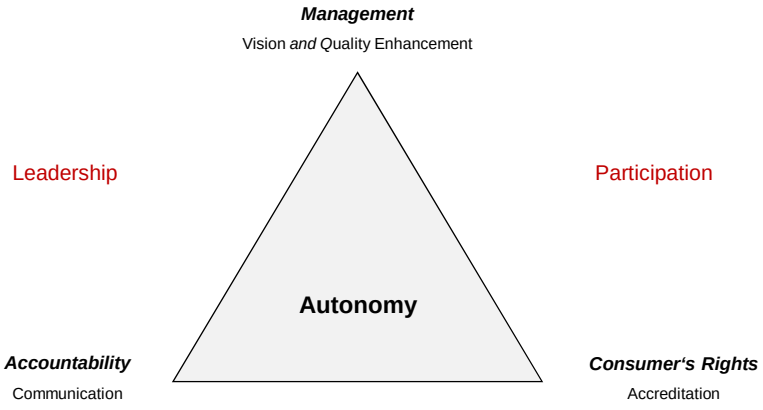
classes. The capability to run intra-university projects is a crucial prerequisite in this context, and the possibility of using a strategic fund (at the disposal of the president or the dean responsible for a given initiative) may highly enhance the motivation of the different partners.

5. Conclusion: Bologna as Governance Test

The intended quality reform cannot be prescribed top-down. The better the existing culture and participation, the better will be the outcome and the transformation. There are *different levels* of actions. Firstly, there is the question of a university's autonomy. Secondly, there is the way how the university proceeds within a specific framework. And thirdly, there is the real involvement of faculty.

An efficient solution of the twofold problem of profiling and re-packaging ask for leadership *and* identification - a combination that, first of all, depends on the institutional autonomy. The relatively poor Bologna results in France and Italy could partly be the outcome of too much centralized and bureaucratic decision-making. However, universities with a high degree of autonomy may miss the necessary change too – because of an authoritative planning method or, at the other extreme, just by waiting and conserving old structures. Picture 4 shows the fundamental goal-conflict that determines the quality reform discussed in this article.

Picture 4: *"Bologna" and University's Autonomy*



In a general sense, three difficult questions arise:

a) Who is responsible for the content of and changes to the curriculum?

b) Is the governance of the university a major factor in determining which groups have primary responsibility?

c) Quality assurance and quality enhancement: do they have a public good character or are they purely internal?

The use of Bologna as quality reform must be conducted carefully and diligently, involving management, professors, and students at the same time. The *president* must be a process owner with a keen sense of internal moods. And there is no doubt that the university needs a real quality management system. Which type it chooses (e.g. EFQM, tailor-made internal development), and how strongly centralized it is, should be a strategic decision of the university management. Usually, it should start with a broad discussion of university's vision, assuring feed-backs from the faculty.

The external pressure on the planning, mentioned earlier, has different shapes. The management has to organize the participation of the stakeholders, namely the industry. In the very least, the discussion should clarify the learning outcome and demonstrate the character of the new Bachelor and Master degrees. A well timed redesign of this architecture goes hand in hand with specific changes of the scientific orientations. Employers and students should understand the resulting shifts. There is no quality reform without a change of "*Berufsbilder*". Normally, professional organizations are very conservative and try to reproduce what they have believed to own in the past. One should listen carefully to their arguments, but one needs to be equally aware of the fact that structural change is transforming industry in a fundamental, irreversible way as well. The life science revolution, for instance, cannot be tackled with the traditional curricula and restricted assumptions on the preferred industrial employers. Specialization often becomes the enemy of innovation.[11]

Finally, there is the need for *accreditation*. Oriented versus transparency (not governmental control), this process has to be a "non-invasive technique" – respecting university's autonomy, leadership, and a free choice of management methods. There is an interesting discussion in Europe on the different forms of accreditation. In several countries we find a mix of program and institutional (or systems) accreditation. Institutional accreditation is a prerequisite, not a guarantee for product quality. In the long-term, we definitively need both: institutional and program accreditation – visiting the kitchen *and* eating the pudding[12]. The current introduction of the "*Systemakkreditierung"* in Germany clearly shows: institutional accreditation, program accreditation, and governmental regulation are politically highly interdependent. The less both government and agencies intervene, the higher is the university's responsibility.

Not only top-edge research but also qualified higher education is a risky business. Following Popper's idea of the non-predictability of scientific progress, only competition between universities, departments,

[11] *C.P. Snow*, 1959, The two cultures, Cambridge (UK), Reprint 1998, p. 19

[12] *S.W. Bieri*, 2007, Programmakkreditierung, Eine kritische Analyse, in: Handbuch der Qualitätssicherung, F 1.3, pp. 1-16

and programs is able to produce a feasible solution in our case. Increased mobility of students leads to stronger competitive leverage. Bologna as a quality reform in a rapidly changing, uncertain environment demands new and better profiles. For that, a simple university must dispose of the necessary funds to finance the transformation *and* to bear the eventual risks of the reform.

In the digital age, the university may survive as a physical place if it is focusing on its specific strengths: the interacting community of scholars and the center of culture. The best institutions "will be those demonstrating the most effective gains in learning and learning skills among their students"[13]. *Shaping the learning environment and changing the content: this is the difficult task.* For the next years, university leaders need a new understanding of accountability.

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[13] *F.H.T. Rhodes*, 1998, Challenges Facing Higher Education at the Millennium, Phoenix, p. 171