Review; Output 2: Architectural Entrepreneurship.

The following is a review of the documentation of four workshops, which were held at TUM between 2017 and 2019, as part 2 of the Bauhow5 project: *Architectural Entrepreneurship: Suitable fast-track formats in second-cycle education to create a new mindset and open up new career paths in creative industries.*

We compare the results of the workshops with the objectives and short description of the project.

The review was written by Amandus Samsøe Sattler and Prof. Mikala Holme Samsøe, both external participants in Workshop 1.
Both trained architects, Mikala also holds an Executive Master's degree from a Business School in Leadership and Innovation in Complex Systems. Amandus participated in the workshop as a project partner in his capacity as Director and Founding Partner of Allmann Sattler Wappner Architects.

Both participated in three preliminary talks with the organisers, but also once with representatives of the partner universities and helped to shape the topic for the first workshop.

1. Did the workshops meet the overall objectives?

The objectives were met when considering all four workshops together, and measured against the overriding objective of "Entrepreneurship". The workshops were organised and carried out with great attention to detail and with strong external partners. The students' evaluation documents a lively and inspiring atmosphere. We were able to experience this ourselves just as much in the first workshop.

The title of this part of the Bauhow5 project is "Architectural Entrepreneurship" with the objective of linking university research and business with the construction sector ("a deeper embedding of research into faculties/schools of Architecture and the Built Environment(A+BE)". If these aspects are considered more closely, both the topic "Architectural" and the topic "Research", (understood as research, scientific work or knowledge and not just "investigation") come up too short.

The connection with the emergence and the conditions under which architecture and physical planning emerge is only indirectly recognisable in the workshop and the question arises as to what is actually meant by "Architectural".
The results of the workshops have a strong focus on processes and digital solutions in "creative industries". This is likely to make true integration and acceptance in current architectural studies (and A&BE in general) more difficult. We wonder why the new working methods are not practised with examples that are closer to A&BE.

> *Objective a: Enable exchange between education, business, policy-making, and research & development in A+BE.*

a) Everyone was there. Except for the policy-makers.
Except for policy-makers, all the voices mentioned above took part in
the workshops and, thus, an exchange was made possible. Certainly, it
was an enrichment for the students to experience the external partners
in person and to understand them as users or customers. The critical
question is whether it was a true mutual or rather a one-sided
exchange in which the students benefited most.

There was no evaluation on the part of the external participants, who
were called partners. This does not seem to be the main focus either,
which is perhaps understandable for the test phase of a university
education programme.

> *Objective b: Establish partnerships among higher education*
> *institutions, industry partners, professional communities, and*
> *local as well as regional authorities.*

b) Benefits for the partners not sufficiently visible
Participation as a partner requires a significant time commitment as
well as detailed preparation and an adequate knowledge level. The short-
term work input and output of Master's students, on the other hand,
cannot – judging by the results of the workshops as well as our
experience in teaching – provide an(extrinsically) motivated benefit for
a partner.

The external partners potentially had an intrinsic motivation:
Participation in a process (no matter which) at a university is
usually personally enriching for a partner who otherwise has no
contact at a collaborative level. The opportunity to formulate and
present a case or dilemma from everyday life offers the partner space
for reflection and is either remunerated with a monetary value or
represents a voluntary service.

However, this intrinsic motivation is not sufficient to bring about a
more effective long-term partnership for the partner. It needs
additional extrinsic motivation to achieve a sustainable partnership.

The documentations – both implicitly in the discourse and explicitly
(e.g. page 170 / Documentation 1) – conclude that the partner
companies could benefit from getting to know the new format, as an
inspiration for their own further education programmes and topics, and
from the innovative ideas of the students.

In order to establish a true partnership, it is quite conceivable
that the benefits that the partners could have are to be found
outside the format of the fast-track workshops. For example, in
formats that accommodate longer working periods. (Keyword: Industrial
Ph.D)

But this was probably not the primary objective of the fast-track
format, especially in the test phase – it was more a matter of using
a wide range of contacts and bringing international names into the
format, which was also very successful.

> *Objective c: Raise Awareness of the value of research*
> *and entrepreneurship in A+BE*

c) Awareness of entrepreneurship is there...

The students who took part and submitted their report have clearly experienced that it is possible to work together in an interdisciplinary and creative way on real problems and with expert knowledge in a short period of time, in order to achieve complex results which can be pro-actively presented and sold to a user/customer.

The students test their idea on the partners, representing a user or a customer, and in this way, they learn that theoretically, this is the way to win an order or an invention that can be developed in their own start-up.

It can be seen that this is a kind of short introduction to the important basics of entrepreneurial spirit, in which the creative way of working is highlighted as the basis for a new business idea or invention. This is particularly visible for students of architecture, for example, in cases where management students have prepared a business plan.

We understand indirectly that 1/6 to 3/4 of the students did not submit their report or dropped out along the way. It is not recognisable which study affiliation the authors of the individual reports had, and thus whether interdisciplinary teams actually wrote them or whether it was the architecture students who pulled out. That would be relevant information.

... Research missing

The awareness of research – understood as such – is not given enough attention here. The well-founded research (or at least investigation) is missing and cannot be done in the fast-track format (2 - 5 days). It must be made clear to the students that a methodology is practised in the workshop in an exemplary and playful manner, but that participants in the group are also needed who bring expert knowledge with them.

Otherwise, it has the opposite effect and leads to the legitimisation of half-baked knowledge and subjective perception.

> *Objective d: Extend the role of research outcomes A+BE for the marketplace, i.e. creative industries, construction industry, professional bodies, government*

d) Research-based practice – as a long-term goal.

The objective that research-based work should play a more important role in industry and government is felt by the students, but it is not primarily fulfilled by the fast-track format of the workshop.

The format does not allow students to experience this but remains a theoretical or case-based assertion. This perspective is, of course, also valuable as a perspective, or opportunity for professional life, or a change in working practice.

It is interesting that research-based work is something of a 'slow burn', which in the practice of BE (Build Environment) collides with the fast pace of life and a lack of long-term funding.

The choice of a fast-track format approach asks for an examination of this conflict if research is to be taken seriously.

We see the discussion of a research-based practice more as a long-term goal in the current state in Part 2.

> *Objective e: Open knowledge and foster the exchange of information, ideas, strategies and policies between researchers in A+BE and their careers (in academia and practice).*

e) Objective too high?

We understand the workshop as part of a complete assignment, in which the objective is to sensitise and inspire those involved for a topic in multiple ways, including the fast-track format.

The objective that the students understand (in-depth) that they can use scientific work in an academic (and business) context is too high for the 2-3-5 day workshop format, which also has other important objectives to pursue. Other (quick) formats such as personal life story or case reports could also serve this purpose more efficiently.

> *Objective f: Expand innovation culture to facilitate, expand and enrich research/innovation networks in A+BE, including improving research infrastructure (facilities, education programmes, equipm.)*

f) Successful outlook

Participation in a workshop fulfils, above all, the objective of enabling students to try out working methods for interdisciplinary cooperation so that an innovation culture can grow. Maybe they discover an interest – or at least the importance – that development processes must be actively designed and accompanied, which corresponds to the overall objective.

A culture of innovation, in an educational institution, also includes rooms and equipment, as well as the ability of staff to adopt these formats. This is the case here.

The photo documentation of the four workshops also indicates that both the graphic reworking and the spatial staging and accompaniment were repeatedly tried out and improved. This makes the documentations inviting for further study.

2. Did the workshops convey innovative elements and would there be more?

Elements of Innovation:
> *Establish a testing ground for selected fast-track educational formats from other fields (like management/engineering/design business) for adapting them to architecture study programs as well as linking academia and creative industry.*

> *Bringing together students, researchers and stakeholders in one place, developing creative solutions for real-life challenges.*

> *Combining the thinking and tools of architecture with business administration approaches and design thinking methods to lead to professional awareness of architectural entrepreneurship.*

The project description defines three innovative elements or aspects to be conveyed in the workshop format.
None of these elements is pronounced in the curriculum of traditional German university education for architects and there is a high potential and relevance to introduce/enable these elements in the course of an architectural degree programme. Thus, the format/objectives can be directly described as a new invention or innovative aspect of teaching.

It would also be a big step in development to anchor this type of workshop format, via teaching, in the design development in the architectural offices. Especially when it comes to scrutinising the status quo or innovation (as well as during a phase zero) it concerns developing the task and formulating the project goals, it would be helpful if the students could get to know these formats as a serious tool for successful work.

3. Have the workshops achieved the expected impact?

Expected impact:

> *Strengthen the entrepreneurial mindset among students in A+BE by the application of design-based research/invention in the marketplace.*

> *Raise awareness for students in second-cycle education about their entrepreneurial potentials & capabilities, about the value of architectural/built environmental thinking for other industries.*

> *Encourage students to seize the opportunity of entrepreneurship-based career perspectives by joining start-up teams, establishing knowledge companies, or developing services/products*

The right way? - more slow-track?
The intensive workshop format is one possible way to achieve the desired impact. We critically question the fast-track approach – knowing full well that an intervention must first take place with small, quick measures – to gain interest and relevance.

It would be desirable if students who are interested in the topic could dedicate themselves to it in longer courses, e.g. in a semester, a summer school or a specially organised internship.

What does - architectural - entrepreneurship mean?
The TUM has its own faculties and institutions that support students in general with the topic of entrepreneurship. But what is special about this initiative is that the topic of entrepreneurship is viewed from the *side of architecture* and it poses the following questions for us: What does this mean? What significance does it have for the outcome and the chosen tasks, materials and tools?

Both tools and the results do not have much to do with the idea and the subject areas of architecture from a classical point of view. A shaping process often finds satiation on a digital surface level. Physical results – including those represented with models or similar – are not a distinct part of the stimulation. The colourful memo papers and common markers belong distinctly in the toolbox of management consultancies inspired by Design Thinking.
We miss the fact that it is more visible in the output that architects were involved in the process. Aesthetics and graphics partly correspond to the participation of laymen, but not of professionals in the respective profession.

4 Are the results transferable?

Transferability Potential:
>Core aim is to make this output usable for others outside the alliance partnership.

> By documenting the tested methods, and especially the process of co-creation and collaboration, the results will become visible and reachable more widely.

> Other universities can build upon the lessons learnt and apply them to their specific capabilities and needs.

> This will further stimulate the creation of a new mindset in entrepreneurship for students in A+BE, and raise the presence of faculties across Europe as incubators & think-tanks for existing and new industries.

From an individual case to a general description
The four documentations show a comprehensive scope, which is partly a barrier to communication.

It would be helpful to move from the description of individual cases to a general description. The evaluation in each documentation shows e.g. 1:1 the students' statements – but does not systematically reflect it in a general description.

As an inspiration for someone, inside or outside the Alliance Partnership, who plans to organise similar workshops/initiatives, a shorter report of the Lessons Learned would be interesting. This could be combined with a list of ideas for additional formats that could be tried out

How do you bring across the experience of teaching at TUM?
Interesting, we think it is not only about inspiring external parties, but also a target group in a very concrete way: How do you bring this experience into teaching at TUM? How are suggestions conveyed so that others get to grips with the topic?

5. Worth Mentioning: what was special?

Special: The framework of the Bauhow5
The fact that five architecture faculties are dealing with this topic and testing and exchanging ideas is a great success from the outside and something truly special. This gives each workshop an international framework – even if you have never met the university partners.

We cannot estimate how deep this exchange goes – it would be obvious to **set up a common program** – in order to provide short and uncomplicated channels to enable students to participate in a summer school, workshop week or another initiative, including at other universities.

Special: Extensive organisation
Compared to the usual teaching setup, the workshops are organisationally complex – right down to food and drinks. An all-round package is offered at a very high level. This is certainly part of the success and also a prerequisite for the fast-track formats.

Special: Interdisciplinary
What is special about this format is its interdisciplinary character. It is attractive and an important experience to hear other voices. The students also ask for a more interdisciplinary setup in the evaluation. And they should also experience it during their university studies.

At the same time, this seems to be a barrier to the implementation of these working methods in the university chairs.
Cooperation with management students, for example, may not seem urgent if you are an MA architecture student and do not yet have a handle on building construction, design or creation.
However, in this format, you may learn other procedures and methods that are not explicitly part of the curriculum in architecture studies.

6. Limitations: What is missing? What came up too short?

Questions closer to architecture
When it comes to stimulating students' curiosity in A&BE, as well as the classical orientations of the Faculty of Architecture, it would be useful to choose a topic that emphasises and deals with the physical aspects of planning and design.
The focus on digitisation in the workshops is set for financial reasons. Accordingly, many results are an app design and digital platforms. Design Thinking applied to the development of software and product design is well known – it would be interesting to practice these methods in physical planning and in processes that are even more strongly connected to these planning phases.

From Bubble to Integration
This initiative has taken place in a protected "bubble", which is absolutely justified for a test phase. One might ask whether it might be a goal in the future to integrate these formats into "normal" university operations and into the design work of the individual chairs. The organisers could then support the chairs in planning and implementing these formats.

The proximity to both "Architectural" and "Research" would perhaps increase automatically.

Allow time for reflection
The "Sprint" and other fast-track initiatives have a speed that does not allow for much reflection. Double-loop learning could be additionally promoted if the time for reflection is built-in, e.g. at the end of the day. The point is that each individual must formulate for themselves:
What did I learn today? Which methods did I try out? What worked, what did I not understand and would I like to understand?

These questions are answered more or less in reflected fashion by the students in their reports. Some do not reflect and/or even answer at all because they do not submit the report.

A high proportion of students (between 15 and 75 per cent, as we read) did not submit the report. Of these, a significant proportion appears to be architecture students, but this is not explicitly stated. It might be relevant to find possibilities for reflection that can take place more directly – even if the participant does not submit the report.

Examples of fast formats include: If every student maintains a "Learning Journal" (personal diary) for 10 minutes a day, or participates in "Check-In" and "Check-Out" (2x20 minutes), where everyone is asked to explicitly express their findings in the round, one by one. This method also promotes group cohesion.

It could also be useful to have a Check-Out session where, for example, the theories of the working methodology are presented in more detail after the students have had their own experiences with it.
Or a follow-up, where the students can try out the working method again on their own (draft) work.

Lessons learned in short form
The preparation of practical experience stemming from what has taken place (both what has happened and what could take place) is an important part of the transferability potential and the possibility to transfer practical knowledge both externally and internally.

It would be desirable to move from a description of the individual case to a reflection on the possibilities in general, in order to make the findings more easily transferable.

7. Outlook: Recommendation for continuation and further development

What do the external partners gain from this?
The question would have to be fundamentally clarified.

It is not the short-term contact in connection with a workshop and individual students that seems to be the most interesting point from our perspective, but a long-term partnership with members of the universities, chairs, research projects and possibly facilities, which could potentially act as a form of motivation.

The prospect of a company Ph.D. with partial financing from the university (through 50% employment in teaching) would, without doubt, be an interesting possibility.

From process to subject content and research?
Essentially, the format lacks the technical content. Facts and research content are missed out if the work process - rightly so - is given priority in a fast-track format.

Just as with design, students would ideally have to experience several of these processes (or a longer one) in order to be able to apply the working method. Step by step, subject matter and scientifically-based methods could become more prominent.

Slow Track as a supplement?
The short sprint, over 2-5 days, serves as an initial introduction to the topic. It would be worth considering whether "slow track" formats might also be relevant, above all to take the research aspect into account, but also to improve the reference to practice and external partners.

Summer school lasting several weeks; an integrative practical semester (no pay, but 2+2+2 months in the company, at the manufacturer and at the university), where a joint product or process development is driven forward and university teaching staff are provided with process support. There could be many possibilities.

For students and/or young professionals, further education would also be a good option. We are aware that there are legal issues that make it difficult for TUM to offer further education courses, but perhaps it would be possible within the framework of a seminar at the Chamber of Architects.

Of course, it is also obvious that the short workshops should take place within the framework of a semester draft project, instead of being separated from it in terms of time and content as is the case now. This would strengthen the internal connection at the TUM.

What does "Architectural" Entrepreneurship mean?
And what are its aesthetics?

The colourful memos and standard markers belong, in terms of their application, to design thinking in management consulting. It would be memorable and important to find and cultivate your own aesthetics from the architecture or design industry. It would also be good to offer up some space to the topics of models and prototyping.

– and which products does it have?

In the Design Sprint Workshop, for example, it was striking that most groups developed apps as a product – instead of physical planning on the topic of Campus. In the following workshops, apps and digital platforms are mostly developed and formulated as a result. This is maybe because these products were more tangible/simpler for all participants in the short amount of time available.

The applied methods could just as well be used to look at classical tasks of architecture which need initiative and entrepreneurial spirit: The architect as project developer in phase zero. As a companion of user and participation processes. As project manager. Participation by students of Management or the Social Sciences would also be an enrichment here.
The result and the range of topics would aesthetically appeal to the architects and potentially find a greater audience among the university chairs.

It would generally be interesting to have a stronger internal impact on the faculty – if tasks of the Built Environment are to be solved with an entrepreneurial spirit in the future. This brings us back to the first question: What is *Architectural* Entrepreneurship?

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