IABSE: an opportunity for Young Engineers to develop their social skills

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Abstract

Universities rarely have time to develop a major tool for Civil Engineers: their social skills. As a result, recent graduates usually have troubles in presenting their work to different groups of people. During the last years, the internationalisation of Civil Engineering has increased their difficulties as they need to work in a common language that may differ with their first language. In addition, young engineers need to learn how to interact with people from other cultures around the world. These social skills demanded in the current labor market are traditionally learnt by young engineers themselves in a process that might be overwhelming.

Being a member of IABSE, and specially participating in their conferences and annual meetings, offers a unique opportunity for young engineers to develop their social skills as they can get in contact and talk in front of a broad spectrum of engineers from both the industry and academia. Furthermore, young engineers can discuss topics and exchange ideas with senior and junior engineers in a friendly atmosphere.

Keywords: Social Skills; Young Engineers; Past Present and Future;

1 Introduction

The International Association for Bridge and Structural Engineering (IABSE) is a scientific/technical Association that covers all aspects of structural engineering taking into consideration technical, economic, environmental, aesthetic and social aspects [1]. The Young Engineers Programme (YEP) within the IABSE organisation is focused on issues relevant to young engineers, fostering the participation of young engineers and facilitating their international networking. YEP, and also this paper, looks at the future of IABSE by looking at the role of Young Engineers within the organisation. However, quoting the IABSE Foundation Past President Jean-Claude Badoux, "No history, no memory, no future!" and therefore this work starts remarking the milestones in the foundation of IABSE and YEP.

There is probably no better reference to explore the history of IABSE than the book authored by many people, but mainly Arthur Rohn, Mirko Roš, Leopold Karner, Gaston Pigeaud and Friedrich Bleich, to overcome the professional isolation of engineers after World War I. The mere roots of IABSE are based on the internationalisation and the exchange of knowledge, focusing on the interests that we have in common and bridging our differences. Social networking has always been important to IABSE and it is one of its distinguishing characteristics. Figure 1 shows an excursion of the Permanent Committee and accompanying persons in Stockholm in 1949. The integrative nature of IABSE is apparent in the third article of its bylaws in 1929:

"Every individual person interested in bridge- and structural engineering may become a member".

Figure 1. Excursion of the IABSE Permanent Committee and accompanying persons in Stockholm in 1949. Photo: gift from Alfred Moe and now in the IABSE archive.

The selection of Switzerland as the seat of the association was not casual, as it had a neutral position during the global conflicts and the convulse years afterwards [2]. Today, the mission of IABSE is still to exchange knowledge and to advance the practice of structural engineering worldwide in the service of the profession and society. It has members in 100 countries and has 48 National Groups worldwide [1].

YEP was created in the Melbourne Symposium in 2002 to support a mechanism that would allow young engineers to attend the event at reduced registration fees. The objective of YEP is now beyond the mere reduction of registration fees, and it encompasses involving young engineers in the activities of IABSE and maintaining the existing high level of structural engineering thanks to the intellectual contributions of tomorrow’s leaders [2].

1.1 Experience of YEP members

My first time on an IABSE-Conference was in Weimar in 2007. It was Prof. Annette Bögle who introduced me to IABSE and suggested to join the YEP Board, because so far I was not connected to engineers beyond my university.

IABSE means knowledge, friendship and diversity. Especially the annual meeting with other members is a benefit, because I can discuss topics, exchange ideas and gain their knowledge. That is the major reason for me to be a member. In my opinion the Young Engineers Program is still vitally important since the number of young members decreased during the last years. Only new members let the IABSE network grow and expand and increase the knowledge within the working groups and commissions, which makes the association unique. by Doreen

I was introduced in IABSE by my mentor José Turmo just after starting my PhD. At that time I knew nobody from the Structural Engineering Field away from my home University. So the IABSE conferences were for me a great chance to meet new and interesting people and to increase my network. As a matter of fact, thanks to these relations I was able to make two stays abroad (at Tongji University and at TU Berlin) before finishing my PhD. During all the conferences I enhanced my confidence and improved my ability to speak in front of people from all around the world.

Despite of the advantages of the conferences, a life changing experience for me was when I was elected as a member of the YEP board. After the initial insecurity when first elected 4 years ago, I discovered in the YEP a varied group of colleagues (from industry and academia) who share both my technical concerns and my desire to push for Structural Engineering. In this period, we have supported the organization of a number of Workshops, Round Tables, Papers and Getting Together Events. Furthermore, being a member of the YEP board gave me the opportunity of being elected for the Scientific Committee of the IABSE Conference in Rotterdam.

I really recommend you (young engineer) to be in touch with the YEP and being involved with their future activities. And if you feel with the desire to push for the association do not hesitate to propose yourself to became a member, because without any doubt you will get much more than what you give, and you may become both a better person and better engineer. by José Antonio

Even if I was an IABSE member before, it was not until I attended my first IABSE event (Future of Design 2012 in London) when I started enjoying the real benefits of this association. During this event, which was a national group conference aimed at young members, I managed to know many young designers with the same interest for structural engineering as me. We all work with engineers and designers in our institutions, but the passion of IABSE members is far beyond the
conventional interest. Networking with IABSE members in several other events has allowed me to establish some good relationships that have led to further collaborations with some members, and most importantly, to very good friends. Finally, another aspect that I really value is the opportunity to keep updated with the latest trends and news in the structural engineering world. Overall, being an IABSE member has been very helpful and this membership is the one that I most enjoy when compared with other institutions. by Fernando

I joined IABSE in 2006, soon after finishing my degree and well before completing my PhD. Only recently I became part of YEP and I had the opportunity to contribute more actively to IABSE. I was introduced to the association by Dr MDG Pulido (always known to IABSE as “Loli”), which I consider my mentor in the first years of professional practice, both in industry and academia. In these years, when you have to decide your route in the broad and beautiful profession of structural engineering, IABSE gave me the opportunity of learning from the best engineers and architects in the world during the annual conferences, of extending my network in different meetings and social events, of enriching my technical knowledge with the journal and other documents prepared by the different working groups and, may be more importantly, of looking at the profession with the perspective that you may only have when you travel and interact with people with different cultures from around the world. by Alfredo

2 IABSE for YE

IABSE offers different accounts for young engineers. The conferences/symposia are the most attracting part of IABSE, especially for young engineers, because meetings are a platform for exchanging ideas. The following paragraph should give an overview of what IABSE offers for young engineers and especially for their professional development.

In our opinion, it seems to be an entry barrier for young engineers into the association, because some unique features are missing and a good balance between work and benefit is often not recognizable.

2.1 Conferences, Annual Meetings

Annual meetings with other members are a benefit, because one can discuss topics, exchange ideas and gain knowledge. That is one of the important reasons to become a member. Young Engineers can give presentations at the Conference or the Symposium, present their work and get feedback. Nowadays, engineers work globally and especially young engineers need intercultural competence and a global network. Conferences and meetings offer both.

![Figure 2. Annual Meeting in Venice in 2010](image)

In getting in contact with other conference attendees with the same profession, engineers get to know the characteristics and learn the qualities of other cultures. The diversity of members provides new inspiration for their current work. The exchange between different professions also offers the possibility to talk about different approaches, techniques, because the conferences deal with all phases of the construction process as well as education and research. Additionally the traditional social event parallel to the official program gives the opportunity to get in contact in a more casual way with people that share the same interests. We agree, it is hard for a young engineer to join the yearly conference. Nevertheless we think the effort is worthy.

2.2 Working Groups/ Working Commissions

The contribution within the technical and non-technical groups shows on the one hand the scientific way of working out new documents and also it is the chance to exchange knowledge more often, for example by web-meetings. The BASAAR (special session focusing on a special topic organized by the working group or commissions) is a powerful tool to present the results of Working
Groups (WG) and Commissions (WC). Aware of their importance, IABSE is trying to bring Young Engineers into every WG and WC.

2.3 National Groups

National groups are the basis of the association. Activities within the National Groups make mostly the first contact for young engineers with IABSE. During the last years especially the Swiss, the British and the German Group arranged symposia designed for young engineers, on a national basis.

Graduate and PhD students as well as young practicing engineers have the opportunity to present their Master’s or Doctoral theses or their first projects from practice and prizes are given to the best presentations. These events show the benefits and give guidance and introduction in the network, bringing more life into the association. This way more young members will join IABSE, because they want to interact with other members.

2.4 Workshops

Despite of their importance, workshops about structural design for young engineers are not very common. In fact only two of these have been currently carried out (Madrid 2014 and Nara 2015). The support of outstanding engineers is essential to solve complicated structural problems that arise in these workshops and from which Young Engineers gain a priceless experience. Both workshops promoted design, inspiring future generations and bringing together young designers with leading designers. They were about developing ideas, while listening to lectures, giving talks, and creating a solution with an evaluation at the end. These kinds of activities give young engineers the possibility to gain experiences to work in a group, which is a basis for their future career.

2.5 Round Tables

Round tables provide a great opportunity for discussion between IABSE members and experts in different fields, and most of IABSE events keep a slot for discussion tables. These tables are excellent for exchanging ideas from different perspectives that the stakeholders may have.

In the recent years, more and more young engineers have participated in these round tables in conjunction with senior engineers. As a result, the opinion and voice of young members can be listened. A clear example is the Education panel held last September (2014) in Madrid during the IABSE Symposium, in which a young professional and a student had the chance to discuss the weaknesses and strengths of the current education system.

3 Development of Social Skills

Schools of Civil Engineering rarely have time to develop a major tool for Civil Engineers: their social skills. As a result, recent graduates usually have problems to work in team and to communicate with the stakeholders. An example that illustrates this lack of soft skills in students of Civil Engineering was found in the 1st Workshop On Bridge Design (WOBD 14), celebrated last year before the Conference in Madrid. This Workshop included a design contest for students of Civil Engineering and Architecture that was evaluated by a committee of experts in structural engineering. Even though the number of students of Civil Engineering was significantly higher than the number of students of Architecture, the latter won the contest.
During the last years, the internationalisation and competitiveness of the Civil Engineering field has increased the necessity of the soft skills. In fact, the companies seeking for young engineers to hire are usually focused on non-technical skills, such as how the person communicates and interacts with people from other cultures around the world. In other words, soft skills have become a key differentiation in the current labor market. Nevertheless, the process of getting these skills for a student might be overwhelming. Aware of these facts, Civil Engineering Schools worldwide are beginning to complement the traditional subjects with other ones based on the development of the soft skills, such as “Oral Expression”, and extracurricular activities, such as debate contests. All these activities might even shape specific MSc Programs, such as the “Master in Leadership on Civil Engineering” offered by the University of Castilla-La Mancha (Spain).

Being a member of IABSE, and specially participating in their conferences and annual meetings, offers a unique opportunity for young engineers to develop their social skills, as they can get in contact and talk in front of a broad spectrum of engineers from both the industry and academia. These different profiles you can be in touch with when participating in Working-Commissions can help you improve your performance in an non-hierarchical environment. Furthermore, young engineers can discuss topics and exchange ideas with senior and junior engineers in a friendly atmosphere.

Three of the main skills that might be developed in IABSE are described below and summarized in Table 1:

![Figure 5. Social Event in Seoul in 2012](image)

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<tr>
<th>Activity</th>
<th>Communication</th>
<th>Creativity</th>
<th>Leadership</th>
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<td>Conferences</td>
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<td>Annual Meetings</td>
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<td>Round Tables</td>
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<td>Getting Together Events</td>
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- **Communication**: Engineers tend to prioritize technical skills over communication skills, not realizing that they cannot be fully effective in their jobs if they are inadequate communicators. In fact, in most cases communication skills are crucial to success.

- **Creativity**: Every engineer’s core mission is to try to improve the utility of things, to design products or processes that will solve problems better, faster and cheaper. This mission would rarely be achieved if not for engineers’ ways of thinking, which often lead to problem-solving opportunities that would otherwise remain hidden. Creativity can be as valuable to solving a problem as the technical skills to identify and troubleshoot the source of the problem.

- **Leadership**: Leadership, in and of itself, is not one skill but the blending and integration of a variety of skills. By its very nature, leading people is about successfully interacting with them and convincing them to follow. This makes
leadership a key soft skill for professionals who intend to make a difference.

4 Visions for the future

IABSE has been shown to be a very useful platform for young members to develop several social skills. However, the authors strongly believe that IABSE could go even further, and some new ideas are presented to enhance the learning of young members.

4.1 New mentorship programme

Mentorship, a figure that has almost been lost in the current fast-moving socio-economic environment, is a helpful tool that can provide the correct guidance to young engineers in their professional development. It is visible that universities do not provide the sufficient level of skills to students, and as a result, the first years in industry are crucial for the correct development of successful engineers. IABSE could serve as a powerful mentorship platform to guide young professionals in these initial years after graduation since it gathers world leading engineers from the academic, planning, design, construction and operations fields. The current Fellowship programme supports young engineers from the economic viewpoint, but this proposal would serve as a guidance mechanism.

We suggest that the proposed mentorship programme should be divided into two levels: (1) senior member level, to provide professional and career guidance; and (2) junior member level, to introduce new members to IABSE. A more detailed description is presented below:

- **Senior member level.** The objective would be guiding and supporting the professional development of young members in the medium and long term. Each young member could have more than a single mentor assigned, who could be contacted occasionally for meaningful guidance. Apart from the digital conversations, IABSE events could serve as a platform to eventually meet mentors. Some of the ideas that could be discussed may include: job decisions, strategies for charterships and/or professional licenses, further education, new trends in engineering, technical jobs in comparison with managerial jobs, etc.

- **Junior member level.** The objective would be presenting IABSE and its benefits to new young members. New young members would be given the opportunity to take full advantage of all the resources provided by IABSE, and this would definitely enhance the development of young members. Some of the ideas to be discussed may include: benefits offered by IABSE, learning resources, participation in YEP, participation in other WC/WGs, events oriented to young members, etc.

Owing to the nature of this initiative, mentors should be chosen from a pool of volunteers. Volunteers could register as mentors by filling a form that would contain key information (e.g. country, industry/academia, areas of expertise) that would be employed by new young members to choose the preferred mentors. Each young member could select more than a single mentor, and equivalently each mentor would guide more than a mentee; this would promote variety. In essence, this new mentorship programme would enhance the skills and development of young IABSE members.

4.2 International contests

We live in a competitive world. International contests would be the best way to:

- (1) learn how to work in team to give original and feasible solutions to real case studies,
- (2) extend the limits of our knowledge with structural solutions that are not so strictly governed by economic parameters as in the real-life professional practice, and
- (3) to get recognition of your work from the panel of international experts that should conform the board.

The idea of these contests is not new, they have been organised locally in Madrid and Nara by IABSE. We think it would be strongly beneficial to organise a prestigious international contest on
annual basis. Both the participants, the winners and panel members will benefit from the prestige of the prize, which will be more and more popular with the years.

4.3 Newsletter

Sending an annual or bi-annual newsletter could help develop a more successful network between young members. Young members find difficult interacting with other international young members unless they attend IABSE conferences, which is not always feasible for youngest members. A newsletter based on articles prepared by young members for young members could serve as a platform to let other like-minded members know more about different activities organized in other countries. These articles could also include recent projects or research works in which young members have been involved. These newsletters should also serve as a platform for sharing opinions and raising improvements and suggestions from all members. Some countries, such as the UK, implemented many years ago this platform that provides useful insights from events and projects for all the British members. An informative platform like this may facilitate potential collaborations between IABSE members in the future, leading to an extremely helpful association for international collaboration.

4.4 Other activities

There many other activities that could be implemented to enhance the development of young members, such as: special sessions for young members organized in IABSE conferences to share ideas and opinions; introductory lectures in IABSE conferences to a specific field; increasing learning resources; workshops to develop new skills, etc.

5 Conclusions

We, as YEP Board members, strongly believe that the best way to continue accomplishing our mission is letting young engineers know the multiple benefits of being an IABSE member. One of these benefits is the development of social and soft skills, which are highly demanded in the current international job market. The authors present a first-hand insight of how IABSE has contributed to their personal development, and this is crucial to show the value of IABSE. Moreover, some new visions are presented for the future of the YEP.

The ideas presented in this paper could lead to interesting discussions in a Round Table during the IABSE Conference in Geneva 2015. And hopefully, more members could be attracted to this amazing association: the IABSE family.

6 Acknowledgments

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7 References