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Subject: Book Review of *Engineering Speaking by Design* and Discussion of Relevance to Statistical Consulting Profession

Many people, whether good at public speaking or not, tend to have a hard time dealing with technical presentations. The book *Engineering Speaking by Design* addresses a novel but practical and effective way of conducting technical talks. It states that ***a technical presentation can be viewed as an engineering project***, in the sense that it should be and can be designed, and ***the process is just like conducting an engineering project*** [1, p. 11]. Especially, the same engineering design principles apply [1, p. 11]:

1. *Understand the goal.*
2. *Conduct research.*
3. *Generate possible solutions.*
4. *Choose a solution and implement it.*
5. *Evaluate, and improve if necessary*

The book then develops its discourse on how to design a technical presentation by applying these engineering design principles. First of all, it is stated that ***the goal as a technical presenter is to communicate information to an appropriate target audience*** [1, p. 17]. Everything in the presentation should serve for the purpose of conveying information regarding the subject to a specific audience. The importance of keeping this goal in mind is restated and emphasized many times throughout this book. Along with the goal, some target specifications also need to be seriously considered, such as the time length, the venue, etc.

With the goal and target specifications in mind, the structure and further the content of the presentation can then be built up successively. Some basic principles of designing

typical parts (introduction, conclusion, body, outline, etc.) of a technical presentation are discussed [1, Sec. 3]. Reminders of proper usage of certain elements (usage of logic, English, mathematical discourse, visual aids, ethics) during a technical presentation are also provided [1, Sec. 4.3-4.7]. Specially, basic principles of making slides are addressed [1, Sec. 4.6]. Then, with a "solution" built up, optimization can then be done by rehearsing, evaluating feedback and then iteratively improving [1, Sec. 5].

So far, a technical presentation has been built up. But the book does not end its discussion here. It goes a step further to discuss the typical process of delivering a technical presentation in the professional field. It informs us of some ***standard practice and provides some tips when delivering a technical talk*** [1, Sec. 6]. Furthermore, it also offers advice on what to do after the presentation has been delivered, including expecting professional contact, getting prepared to be in demand and self-reviewing / reinventing / archiving the presentation [1, Sec. 7]. These sections guide us through the process of a typical technical presentation and thus make us better aware of and better prepared, which I believe is another valuable point of interest of this book, especially for beginners.

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In my opinion, this book is a useful book for people, especially engineers to get started on preparing technical presentations. The ideas and advice of this book can be applied to many technical or professional fields. As far as I am concerned, I plan to pursue a master degree in data science and then start off a career as a statistical consultant. I have recognized high relevance of the discussion of the book to the statistical consulting profession, and I will discuss such relevance in the rest of this document.

1. The book reminds me of the importance of being a good technical presenter. Just as is pointed out in the book, as an engineer, "you will find your self delivering important talks to important people" [1, p. 2]. This is especially true in the statistical consulting field. The job of a statistical consultant typically involves "carrying out statistical analysis" per clients' request and "reporting the results to back to the

clients" [2]. The form of reporting would typically include written reports and presentations. Therefore, technical presentations take up a high proportion of the work of a statistical consultant. Failure to deliver a satisfying presentation will disappoint the customers, affect your reputation and lead to career stagnation [1, pp. 3-4], let alone an ineffective or even misleading one. Therefore, strong technical presentation skills are definitely desirable in the statistical consulting profession. This can also be confirmed by a peek of the requirements for recruiting new statistical consultants in Select Statistical Services, a consulting company in England: "…strong verbal and written skills together with the ability to communicate statistical ideas and concepts clearly and succinctly to a non-technical audience" [3].

2. The idea of viewing technical presentation as an engineering project and then applying engineering design principles to it works well for me. It provides me with a standard clue to work on designing my own technical presentations as a beginner in the professional field. That is, I can begin by first recognizing the goal, and then generating corresponding structure and content based on my previous technical work of data analysis, etc. This would probably be of less use for experienced consultants, since the idea of how to establish a presentation is definitely already embedded in their mindset. But for a beginner in this field, I believe such ideas of this book are effective to get started.

3. The book's emphasis of focusing on the goal makes me better-aware of the focus of statistical consulting. The ultimate goal of consulting is not to achieve fancy results by establishing sophisticated statistical models and using high-level learning algorithm, not to generate fascinating data-visualization, but to effectively convey the crucial information to your customers according to their specific needs [4]. They should be and only be informed of the information that would help them determine how to act or improve. The goal is to provide useful information and advice to them according to the result of your analysis, so that they can apply these into their business and make more benefits. Such idea of keeping a goal focusing on the

customers is of significant importance in consulting, and may even be regarded as one of the golden rules that one should always bear in mind.

4. The discussion on proper usage of certain elements in the content of technical presentations would serve as a reminder and a quick check for me in the future in the statistical consulting profession. Specifically, the discussion on proper usage of visual aids can provide a basic guideline when conducting and presenting data-visualization. The discussion on mathematical discourse would be checked when sometimes explanations on the underlying models constructed are required. Besides, the discussion on ethics also reminds me to always follow the professional ethics of statistical consulting.

5. The introduction of the typical process of delivering a professional technical presentation is a valuable reference for a beginner in the professional field like me. For the time being, as an undergraduate, I rarely have access to the real professional world. Its illustration of the professional process and practice informs me of how to act and what to expect in the future. To be specific, I would refer to the part on handling questions when preparing for possible questions that might occur during my presentations. If I have successfully delivered a satisfying presentation, I would then expect to receive more requests from the customers. Furthermore, I may even try to archive and make my work public and thus recognized by a wider range of professionals and customers.

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To sum up, the book *Engineering Speaking by Design* points out the importance of technical presentations and puts forward an effective way of applying engineering design principles to technical presentations. Besides, as is elaborated above, its discussion is highly relevant to the field of statistical consulting. Again, just as is said in the book [1, p. 4], “in industry, the new ideas that ultimately receive support are not necessarily the best ones from a technical standpoint; rather, they are those that are presented the best”. It is crucial to build up strong technical presentation skills, no

matter it is in statistical consulting field or others, today or future. So why not try out the above ideas and build up your own way to a successful career?

References

[1] J. R. Edward and J. C. Michael, *Engineering Speaking by Design*, Taylor & Francis Group, LLC, 2016.

[2] https://www.careerexplorer.com/careers/data-analyst/, accessed Nov 3, 2020.

[3] https://select-statistics.co.uk/vacancies/statistical-consultant/, accessed Nov 3, 2020.

[4] https://stattrak.amstat.org/2019/09/01/statconsultant/, accessed Nov 3, 2020.