Successful supervision of PhD candidates – a privilege, a challenge and a noble task!

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Much has been and is being said about especially unsuccessful supervision – flaws, neglect, misconduct, power games and a wealth of many other facets of inacceptable human behavior lead the long list of failed interactions. This article aims to shed light on aspects of successful interactions and how both parties – the supervisor and the supervisee – will benefit from a fruitful, conscious and professional yet close relationship.

1. How to define "successful"?

Postulate No.1. Successful supervision tends to happen outside of one's comfort zones

Successful supervision throughout the PhD research phase will bring about an attitude of lifelong learning. However, while it happens, successful supervision is not necessarily identical to what is perceived as likeable by the PhD candidate – nor even by the supervisor in his/her role as a mentor. Supervision is hard work and does not simply happen in passing. It is an act of conscious interaction towards jointly reaching a shared goal. And this goal comes with two features of almost equal relevance: while PhD research is expected to establish new scientific, scholarly insights in the world surrounding us it is also meant to conclude the formation of an ambitious, well-trained and rather unexperienced colleague towards becoming an independent scientist. Achievement of both aspects is measured by means of a snapshot at the turning point from student to scholar.

However, in my eyes successful mentoring of a PhD student has a much broader scope. It is the noble task of mentoring a talented, aspiring, intellectual mind towards critical thinking, resilience, pleasant self-confidence, leadership, courage and intellectual risk-taking, high ethical standards in science and society, societal awareness and a sense of responsibility to share and contribute for the benefit of furthering our knowledge-based societal development.

Successful mentoring thus becomes mostly visible in the (long term) performance of the mentee in terms of employability, career development over time and his/her capacity to contribute ideas and solutions and to set new standards in science and society. In this context it is important to stress that employability and career development refer in equal measure to positions in academia, the private sector and the public domain for all areas of science & technology, of politics, business & administration, of the arts & humanities.

None of the aforementioned more global qualifiers for successful supervision and mentorship can be measured with grades, publication output, patents, or any excel lists with tick boxes and the like, nor do they become clearly defined and transparent at the end of a three to four years PhD research period. On the contrary, successful supervision and mentorship are revealed by carefully following the candidates throughout their PhDs in terms of fostering intellectual and personal growth, the step-by-step development of a well-balanced portfolio of (vocational) skills and an attitude of integrity through well grounded, regular and careful feed-back. Thus, supervision is at times demanding, disappointing and even unappreciated and often challenges a supervising mentor's own limits and comfort zone. Thus, high quality supervision needs to be seen as an art that requires continuous personal growth and lifelong learning on the supervisor's part and involves

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a conscious learning-by-doing approach complemented with meaningful coaching and course work. Consequently, excellence in supervision aimed at "releasing" well trained PhDs necessitates excellent supervisors and they deserve training, support and recognition for this aspect of their work.

2. How to prepare for and foster successful supervision?

Postulate No. 2. Excellence in supervision can be learned, requires experience and merits recognition.
Aspiring as well as experienced supervisors are usually highly qualified, ambitious and time-constrained hard-working individuals. Thus, a meaningful infrastructure for providing support to supervisors and supervisees needs to offer a broad range of formats to allow for effective, efficient and customized input towards improving the supervision experience on both sides. Most favorably, a portfolio of different training formats includes (1) train-the-trainers initiatives, (2) dedicated training for PhD candidates and (3) in a best case scenario also the option for trainings for supervisor-supervisee tandems. Content-wise, such a portfolio is required to cover a set of basic and advanced conflict prevention and resolution tools, including the availability of a transparent list of contacts in cases of conflicts, and a catalogue of clear procedures for conflict settlement in the event of failure of all informal methods for the remediation of a difficult situation. On the institutional end, an atmosphere that fosters communication and encourages or even demands interaction among peers on a given career stage as well as among individuals or groups at different career stages is indispensable.

2.1. Train-the-trainers initiatives
Postulate No. 3. Trainings need to be short, modular and effective.
When talking about the necessity of providing training for the trainers I am explicitly not referring to any standard, pre-fabricated, theoretical training that is often deemed boring. Across the board, PhD supervisors are very intelligent, busy people with a broad range of interests, and excellence in supervision is only one task among many. Thus, trainings need to be short, modular and effective. Any time spent on reflecting about supervision practices needs to provide an immediate return on investment that is an added value for dealing with daily life and routines. A successful format along these lines is a coaching approach – either individually or, depending on the topic, also in small groups, aiming at a better understanding of one's own motivations, weaknesses, and the triggers governing one's behaviors. With a better insight into the origin of tiny daily annoyances it

is easier to become more time-effective and to thus free-up quality time for supervision.

Generally, trainings should be voluntary (except perhaps for a very basic, first short course), otherwise it will be a waste of time for the trainer, for the involuntary participant and for those participants who chose to join in. In a most favorable scenario one would be able to work with a community of willing participants in order to set the stage for those who are more reluctant.

Achieving excellence in supervision requires a certain level of sophistication in terms of communication skills. This pertains especially to the art of giving feed-back in a productive, trustworthy and palpable way. In order to avoid working with standard phrases and communication recipes the acquisition of *brainsmart*[1] communication and leadership skills as well as a deepened insight into the impact of neuro-linguistics on the speaker and the recipient provides a sustainable means of raising supervisory, mentoring and teaching skills to the next level. In addition to these suggestions for a more formal training experience, peer mentoring and coaching, especially by more experienced colleagues for aspiring, less experienced colleagues, is an invaluable asset towards fostering a broad understanding of the features and values of excellence in supervising PhD candidates and other early career stage co-workers in general. In this context it is worth mentioning that the most junior colleagues, who are at the challenging turning point, morphing from Postdoc and single-contributor to supervisor and team leader, are often given a huge amount of freedom to build their own research profiles and supervise PhD candidates from a very early stage. However, there is only a fine line between freedom and neglect, and a lack of mentoring for colleagues who are yet to grow in their new roles may lead to the most painful supervisory experiences for the PhD candidate and the supervisor alike.

Postulate No. 4. The success of supervision increases with the right match between supervisor and supervisee.
Gaining insight into the latest research on the art of hiring people is another valuable aspect of training that contributes to avoiding disappointment in PhD supervisor/candidate relationships. A thoroughly prepared and well-conducted interview procedure

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1 The term "brainsmart" was coined in the early 2000s by Donna Wilson and Marcus Conyers. Anette Prehn developed the principles into her *Framestorm*[R] method, which "is a systematic brainstorm at the level of interpretation and mindset. It invites the Framestormer to reframe, i.e. reinterpret, a challenging situation." *https://brainsmart.today/* (3 October 2018)

favorably including the opinion of peers in the field prior to hiring a PhD candidate is known to deliver a high return of investment in the long run. Furthermore, when identifying future PhD candidates, it is highly recommended to put emphasis on the potential for growth rather than to simply assess the ostensible academic achievements to date.

Significant research has been done into understanding universal, acquired stereotypes as a basis for accidental behavior that influences conduct and decision-making. The findings are broadly applied towards a better understanding of the prerequisites for accomplishing competency-based recruitment and for avoiding unconscious (implicit) bias[2] in an interview situation. The trouble with unconscious stereotyping is that all of our brains without exception are set up to perfect filtering[3] and to help us to process a massive daily influx of information. Thus, everybody would benefit from the reframing of his/her implicit prejudices in order to ameliorate recruitment outcomes. If in doubt about this, it is a good idea to take the popular and well-respected Harvard Implicit Bias Test[4].

2.2. Dedicated training for PhD candidates

Postulate No. 5. Mind the gap – PhD candidates are novices in academic customs.

Incoming PhD candidates face a lot of challenges during their first few months in their new role. Morphing from a student into a PhD researcher is a big shift and the success factors that allowed the PhD candidates to be high performers in previous settings and throughout their past learning experiences will most likely undergo a great change. During their time as students, they will also have been used to being among the best of their cohort; however, now a new bell curve of high performers is about to establish itself again. Thus, for the first time, many talented candidates will find themselves in a different position within this bell curve and this is hard to digest. Simultaneously, starting the PhD research phase with a dedicated supervisor means building – most likely also for the first time in their lives – a proper professional relationship with the supervisor. A supervisor is neither a friend nor a relative nor an employer in the classical sense, but is still a person with whom the PhD candidate has a close relationship. Therefore, at the beginning of the PhD, it is necessary to learn how to balance proximity and distance within a professional relationship and it is

meaningful to create mutual awareness about the supervisor's and the PhD candidate's views, needs and expectations. Mentoring networks in which experienced PhD candidates support the incoming ones have proven successful in many places – as long as they remain voluntary. In addition to the creation of informal networking opportunities formal training modules covering aspects of communication skills, conflict management skills and some understanding of personality types and compatibility traits can be of great help in boosting a PhD candidate's appreciation for what being a PhD candidate may mean for the supervisor and what kind of expectations are connected to this new career-step. Ultimately, the aim of such early trainings boils down to satisfying a need for mutual understanding between the supervisor and the PhD candidate in terms of their needs, expectations and limitations.

Such fundamental early training opportunities are also a good moment in time for a higher education or research institution to advertise for its identity and implement its relevant corporate values. The onboarding process[5] as such has been identified as a decisive element in the successful integration of new colleagues not only in the private domain but increasingly also at universities and research organizations with respect to their structured PhD programs, graduate schools and graduate academies.

2.3. Tandem Training

Tandem training for a supervisor and a supervisee is the most explorative, adventurous and intensive format for establishing transparent expectations and managing interactions between individuals working closely together in a professional relationship. It is a regular component of continuous professional development especially in clinical settings, and is frequently offered as a more formal training opportunity to leadership in the private sector in order to foster effective and efficient collaboration between leaders and their closest co-workers. Classically, tandem trainings are composed of sessions designed exclusively for the leaders/supervisors, parallel sessions for the co-workers/supervisees, joint sessions for both and training opportunities for each individual tandem. Tandem trainings have their role in setting up new teams as much as in improving or curing difficult relationships. In an academic setting participation will only be successful if it remains voluntary for both parties of a tandem but it can set a great example for what strong teams are all about. Presum-

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2 Bartlett, Christopher A.; Ghoshal, Sumantra: Building competitive advantage through people. *MIT Sloan Management Review* 43, 2, (2002): pp. 34.

3 McNutt, Marcia: Implicit bias. *Science* 352, 6289, (2016): pp. 1035.

4 *https://implicit.harvard.edu/implicit/* (3 October 2018)

5 Bauer, T. N. (2013): Onboarding: Maximizing role clarity and confidence. Part 2 of the 3 part Success Factors Onboarding White Paper Series. *http://www.successfactors.com/en_us/resources.html/* (3 October 2018)

ably, participants may easily become great ambassadors for peers and amplifiers among their cohorts for what they gained during their shared exercise.

Postulate No. 6. Great achievements merit recognition.
Awards for outstanding PhD theses are quite common; awards for outstanding supervisors are becoming more popular, training awards for those who are proactively embarking on improving their supervision and mentoring skills are almost non-existent. While much is done in terms of supervision prizes – more could be done in terms of honoring supervisory track records when it comes to career progression and the awarding of grants including fellowships/ positions for PhD candidates and junior Postdocs to more experienced faculty.

Postulate No. 7. Reinforce the value of leadership skills throughout career progression.
Career progression is a challenging experience at all levels. And while climbing up the hierarchical ladder and enjoying an ever growing reputation in the academic community is generally considered to be positive, it often goes unrealized that such progress has an impact on one's personality. Ample research literature is available depicting the major changes in personality traits that occur when growing into more senior roles throughout a career. For example, the Myers-Briggs Type Indicator (MBTI) Test may generate very different results when taken as a PhD student or later as a junior group leader or much later as a PI. And this is not a weakness of this renowned test but the result of increased experiences, changing priorities and emerging perspectives. At the same time the next generations of supervisees regularly undergo serious changes in their generational identity – just to mention the suite of generations X (born 1965–1980), Y (born 1980–2000) and Z (born 2000–2015)[6]. Evidently, the expectations of the individuals representing a given generation have been shifting significantly over the decades and, as a result, the requirements for doing well as a supervisor, mentor and leader have also undergone quite an evolution. Consequently, excellence in supervision is a moving target and deserves careful nurturing throughout a career.

Postulate No. 8. The right to supervise needs to be merited – continuously!
In most academic settings the right to teach and to supervise PhD students is conferred once at a relatively early career stage. After this right has been

granted to a new supervisor and mentor it usually is never monitored and the leader is left alone with respect to future performance as a supervisor and mentor. While the above mentioned training opportunities are to be encouraged and are designed to help cure the symptoms, obvious shortcomings when dealing with supervision seen among colleagues are rarely addressed and almost never prosecuted. It would be of enormous value if violations of good supervision standards triggered follow-up action, led to a (temporary) loss of the right to supervise and necessitated redeeming this right through a tailor-made coaching program. Nothing is more detrimental to the attitude of an aspiring scientist regarding his/her esteem of supervisory efforts than a lack of sanctions towards supervisory misconduct by peers and superiors. Furthermore, it would be extremely beneficial if the talent for human interaction were made part of the qualification requirements in hiring procedures. In the long run, in order to create space and equality for all kinds of personalities to participate in the research arena it would be helpful to allow for posts as team leaders as well as for individual scientific contributors.

3. How to build and maintain a prolific, reliable, affirmative and healthy professional relationship?
Postulate No. 9. Supervisors should not be left alone – share the burden!
The four eye principle is widely accepted as a helpful means to ensure for factual, unbiased and fair assessment in any given context. When applied to the situation of a PhD project, the four eye principle enriches both the supervisor's and the supervisee's situation. The benefits of collegial hiring decisions as described above hold true for all steps and decisions taken throughout the further progress of the PhD project. Any type of co-supervision effort (from individual mentoring arrangements and proper dual supervision up to the implementation of thesis advisory committees including external supervisors; see also below) enriches the scientific and academic experience of the PhD candidate and provides an enhanced level of security for both supervisor and supervisee in terms of diversification of insights and opinions. The supervisor – as much as the supervisee – will benefit from the alternative views, preferences and backgrounds of the additional colleague(s) forming the supervisory tandem or team. This does not only relate to decision-making on scientific priorities and directions but also to accessing personal networks, professional experiences and different types of research culture. For any type of co-supervision approaches it is crucial that one main supervisor is designated as the first point of contact and assumes the respon-

6 Wikipedia (*https://de.wikipedia.org/wiki/Generation_Y*) (3 September 2018)

sibility for the degree-conferring process. The risk of losing momentum when the sharing of responsibilities turns into an overall lack of responsibility-taking creates too much vulnerability for young researchers who are still at the mercy of their supervisor(s) at a quite early stage of their careers. Furthermore, when setting up a supervisory tandem or team it is indispensable to avoid any situation that could potentially lead to a conflict of interest – be it scientifically, financially or personally. Thus, the choice of whether to opt solely for an additional mentor, to team-up with an internal or external second supervisor, or to go for a thesis advisory committee composed of several academic (and eventually non-academic) colleagues and experts should be made in relation to the thesis subject, the interest and career choices of the PhD candidate and the collegial network and commitments of the supervisor(s). Sharing the tasks and duties related to supervising PhD students can truly provide a safety line for the supervisor and supervisee alike – when complicated scientific and personal situations occur, when progress lags or simply when a third, independent opinion would help to reduce stress and tension.

In addition to supervisory arrangements involving more than simply the main supervisor, there are many other types of support available from colleagues who are active within any type of structured PhD program. Their support ranges from procedural assistance to help in identifying funding resources, setting up contracts for co-supervision in an (inter-) national context or coordinating contacts with ombudspersons and the like.

Supervisors are excellent at academics, but usually have limited knowledge of the "outside world"; thus, they can be approached for advice on academic careers but should not be responsible for broader career coaching or career development support. It is important to foster the PhD candidate's independence with respect to making use of the entire support infrastructure available: the supervisors need to encourage their candidates to be proactive in information gathering and networking in the academic as well the external world while the candidates have to leave their comfort zones and challenge themselves.

Postulate No. 10. The training infrastructure has its role – but it is not the panacea.
For the last decade(s) the debate on the *pros* and *cons* of structured PhD programs *vs.* individual PhD arrangements has delivered ample arguments in favor as much as against both forms. This dichotomy is not necessarily helpful given that there is a whole continuum of intermediate forms resulting from intelligent and creative cherry-picking in a subject–suitable manner that enriches the individual PhD experience with the most promising and helpful modular elements of structured training. Institutional support in terms of a suitable training infrastructure can have many facets ranging from dual supervisory agreements to full blown international, interdisciplinary and intersectorial thesis advisory committees all of which may be embedded in a well-structured graduate school or/and make use of the services offered by an overarching, meta-disciplinary graduate academy. The many services, facilities and broad academic contributions provided by an institutional training infrastructure account for a true enrichment of the PhD experience – and hopefully also for the supervision experience. However, at the end of the day, it is the quality of the immediate relationship between supervisor and PhD candidate in particular that is key to the success of the PhD project and that will have a significant impact on the future career of the supervisee.

Postulate No. 11. The quality of the relationship between the supervisor and the PhD candidate is vital.
When reflecting on the quality of the relationship between the partners in a PhD tandem, it is important to keep in mind that a close professional relationship aimed at nurturing an aspiring talented and rather unexperienced researcher towards becoming an independent, critical thinker does not equal friendship – although it may turn into such a bond at a later stage. The supervisor/supervisee relationship is an uneven one in which both partners are equally and thoroughly responsible for the success of the undertaking but also in which a critical gradient between the two proponents governs the interactions and where the PhD candidate clearly is the dependent partner in a weaker position. While this immanent imbalance of a supervisor/supervisee relationship forces the supervisor into the position of the more powerful partner, he/she is not necessarily the more creative, more astute or more inventive player but simply the more advanced one. It requires a very generous and robust personality to be able to calmly and with liberalness master such a relationship and nurture the progress of a potential future competitor.

Postulate No. 12. Research success (and failure) is not the denominator of a researcher's value as a human being.
Alarming publications on mental health issues among PhD candidates cover a wide range of syndromes and explanations – from being under constant pressure and feeling anxiety to clinical depres-

sion and from stress-induced sleep loss to serious forms of imposter syndrome, just to name a few. A recent study at Ghent University in Belgium[7] revealed that *"one in two PhD students experiences psychological distress; one in three is at risk of a common psychiatric disorder"*. The authors identified the working environment and the organizational settings as the *"significant predictors of PhD students' mental health"* status with conflicting expectations from all individual stakeholders culminating in *"high job demands and low job control"* being the strongest challenge. From my personal experience of having met literally hundreds of PhD candidates to date I would like to add a further observation: Personal valuation and scholarly appreciation are clearly two different items. If they are intermingled or even treated as identical, PhD candidates experience an emotional rollercoaster with serious, long-lasting negative consequences for their personal well-being and academic advancement.

4. What are the characteristics of an affirmative and healthy professional relationship?

Postulate No. 13. The categorical imperative applies. In essence, any relationship requires that the partners treat each other the way they desire to be treated/to have been treated in order for it to be durable, healthy and functional. Universal ingredients for success with respect to a productive, healthy, professional yet close relationship are summarized in Table 1. A key factor for success is a respectful, comprehensible and well-balanced interplay of proximity and distance.

5. Tools for successful supervision in a nutshell

Postulate No. 14. Avoid over-engineering, but walk the talk.

Increased efforts towards establishing rules and regulations for the PhD research phase and defining it either as a third layer of study after the Bachelor and Masters or as the first phase in a researcher's career have led to an enriched framework of procedures and training infrastructures sustaining PhD-project related research, organization and paperwork. A lot of criticism has been brought forth about these innovations and over-engineering the PhD research phase is clearly not recommended. However, very useful tools for improved self-management throughout the PhD phase have been launched, but none of these tools will prove useful if not filled with life; none of them has any value if they remain only on paper. The two most commonly used items are briefly discussed below.

Table 1. A recipe for success – ingredients and action towards jointly nurturing a successful supervisor/ supervisee relationship.

Ingredients	Action
Mutual trust	Acting reliably
Respect	Active listening
Appreciation	Constructive feed-back
Clarity of expectations	Transparency
Fairness	Expectation management; consistency
Dependability	Support; avoiding competition
Feeling valued	Separating scholarly merits & personal value
Support	Availability
Academic delight	Sharing values and goals

(a) Over the past decade, supervisory agreements have become very popular as a holistic training experience for the PhD candidate and the supervisor alike in order to foster a clear definition of expectations for the successful completion of a PhD. Supervisory agreement are helpful in aligning the PhD tandem's expectations from the beginning. However, they are only worth the effort if revised regularly throughout the process.

(b) Personal research training plans are provided by many sources – either free of charge or as validated tools from professional providers. Research training plans are moving targets – in a best case scenario they set the standards for proactive life-long learning. However, they are not the only means of acquiring an attitude of life-long learning and will only work well if not prescribed and controlled by a third party.

6. Conclusion

The caring element of a prolific, reliable, affirmative and healthy professional relationship between the supervisor and the PhD candidate is often misinterpreted as overindulging the supervisee. Just to be clear on this point: High quality supervision has nothing to do with spoon-feeding. Building and maintaining a functional and productive supervision relationship throughout the PhD is simultaneously a challenge, an obligation and hard work for both of the protagonists. Nurturing an aspiring scientist's ability for autonomy, critical thinking and high ethical standards is a noble task. ∎

7 Levecque, K.; Anseel, F.; De Beuckelaer, A.; Van der Heyden, J.; Gisle, F.: Work organization and mental health problems in PhD students. *Research Policy* 46, 4, (2017): pp. 1035.