Succeeding by Failing: The Iceberg in VIS Careers

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Success is not final, failure is not fatal:
it is the courage to continue that counts
Winston Churchill

A person who never made a mistake
never tried anything new
Albert Einstein

Motivation   The academic competitive environment and its 'acceptance & rejection' culture lead to high pressure and stress for researchers at all career stages. The requirement of constant high output production may lead to very long working hours and burnout. Paper rejections may be very frustrating and demotivating. The uncertainty of temporal jobs leads to numerous job applications and job changes, where family and social life may suffer.

When the stress and pressure level gets too high, mental problems such as anxiety, insomnia, burnout and low performance may occur (see Figure 1). Academics are especially prone to these stress-based challenges. This has recently been recognized by high profile journals and institutes. For example, Nature has published a series titled 'Science careers and mental health' in April 2018 (see https://www.nature.com/collections/gnlwffjgtr, accessed Aug 2018). Institutes such as Yale University have run highly successful courses on the joys and perks of academia and how to achieve true happiness in our life (see https://www.coursera.org/learn/the-science-of-well-being, accessed Aug 2018).
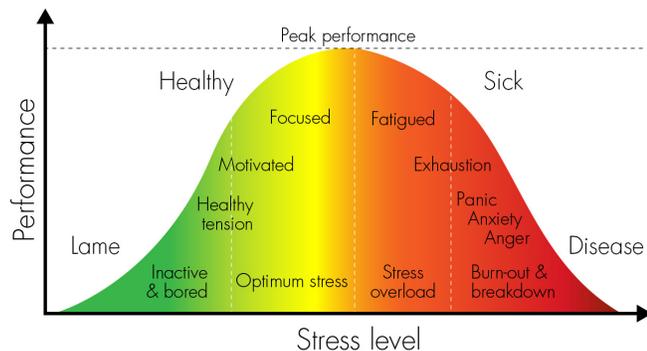

Figure 1: The inverted U-shape of stress and performance, so-called Yerkes-Dodson Law. Picture source (accessed Aug, 2018): http://www.haleo.co.uk/wordpress/whats-stress-got-to-do-with-it.

Based on our personal experiences as postdoctoral researchers, discussions with our students and peers, and informal chats with several VIS researchers, we think it is about time to openly discuss this topic (for the very first time) in our community.

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This panel aims at raising awareness of the threats of pressure in academic life and provide advice on mechanisms to cope with them.

Objectives   We want to break related stigmas and nurture a culture were failures are part of the learning process and should be talked about more openly even by senior members of the community. Threats and coping mechanisms will be discussed in this panel with the help of: six distinguished InfoVis, VAST and SciVis researchers; anonymous feedback collected from the community before IEEE VIS 2018 and during the panel; a psychologist/psychotherapist who treats academics with related problems and also conducts research and teaches yoga.

The objectives of this panel include:

- Start to openly discuss failures in our community and raise awareness on the social, emotional and mental implications that our demanding VIS careers could have on our well-being.

- Provide professional psychological and psycho-therapeutic advice on warning signs of mental and emotional problems, and how and when to seek for help.

- Discuss threats and coping mechanisms with a group of distinguished visualization professors who will share their experiences, and a psychologist/psychotherapist who treats academics with such problems.

- Collect anonymous feedback, comments, experiences, suggestions and answers to survey questions from our visualization community prior to IEEE VIS 2018 and from the audience during the panel (see http://www.luanamicallef.com/succeedingbyfailing).

- Continue the panel discussions in a follow-up meetup at IEEE VIS 2018, where everyone (not just the panelists) is invited to attend and participate.

- Present all the outcomes of this panel and meetup (including also the anonymous audience feedback) to the steering, organizing and program committees of InfoVis, VAST and SciVis to help them reflect on the changes that need to be made during the restructuring process of our community, such that a welcoming and supportive atmosphere is nurtured.

- Initiate a support network for the VIS community and identify possible funding opportunities to organize events at major VIS venues to: (i) educate researchers on how to cope with academic pressures; (ii) train supervisors and research group leaders on how to nurture a healthy work environment.

- Maintain a website with relevant information, such as coping mechanisms and how to seek help, together with the outcomes of this panel and meetup, and other future events on this topic (http://www.luanamicallef.com/succeedingbyfailing).

Panelists selection   We will discuss this important topic with a group of panelists that includes: visualization professors with diverse experiences and different seniority levels, and a psychologist/psychotherapist who has scientific research experience and has treated academics with related mental problems. Their statements cover a broad variety of aspects within the main topic of the panel:

- *Carla C. Schubert*: licensed psychologist/psychotherapist and yoga teacher, female, Austrian/Finnish, Finland-based, Psychology. Topic: providing advice on how to handle psychological stress, pressure and frustration.

- *Sheelagh Carpendale*: full professor, female, Canada-based, InfoVis. Topic: scientific trends driving activities towards the expected and the accepted.

- *John Stasko*: full professor, male, US-based, VAST and InfoVis. Topic: academic work-life balance, role of the community.

- *Niklas Elmqvist*: associate professor, male, Swedish, US-based, InfoVis and VAST. Topic: dealing with paper rejections.

- *G. Elisabeta Marai*: associate professor, female, US-based, SciVis. Topic: giving constructive feedback in reviews, and further topics such as gender issues.

- *Helwig Hauser*, full professor, male, Austrian, Norway-based, InfoVis and SciVis. Topic: role of motivation for dealing with failures.

- *Daniel Archambault*: senior lecturer, male, Canadian, UK-based, InfoVis and VAST. Topic: fixed-term job positions and career uncertainties.

Target audience and its potential profit from the panel We hope that all VIS members will profit from the discussions of this panel, through the following expected learning outcomes:

- *All visualization researchers*: Mechanisms for preventing and coping with stress, pressure and frustration. Advice on how to maintain a healthy work-life balance and avoid burnout.

- *PhD students and PostDocs*: Recommendations from senior researchers on how to secure a permanent position, deal with reviews and rejections, and keep motivated.

- *Group leaders, supervisors and professors*: Tips on how to effectively manage and guide young researchers. Warning signs of psychological problems to look out for in students and ways how to provide the required support or referral.

- *Visualization community*: Recommendations on how to foster a motivating and welcoming atmosphere in our community. All of the points raised as well as the anonymous audience feedback will be documented and handed to the VIS steering committees to help them make better informed decisions for the ongoing structuring of the community.

Panel format and schedule Provided in a separate document.

PANELISTS' POSITION STATEMENTS AND BIOGRAPHIES

Carla C. Schubert *is a licensed psychologist, an integrative psychotherapist, and a yoga teacher. Her research work focuses on the influence of cultural factors on mental health problems, especially traumatic stress sequelae and treatment issues. In her clinical work, she specializes in trauma- and stress-related disorders and she teaches widely on these subjects. She has experience treating clients with problems related to burnout from diverse fields including academia. She works in multilingual private practice and provides psychological counseling and psychotherapy.*

Mental health problems do not halt at academia. If the field is narrowed to young academics as PhD-Students, at least a third of them are depressed or suffering of anxiety according to research studies of the last years. Even worse, a recent survey examining the mental health of PhD-Students by Nature showed that more than half of the approximately 6000 students participating were concerned about maintaining work-life balance during their PhD, nearly 50% decided to seek help for anxiety and/or depression, and one fifth of those who tried to seek help did not feel supported by their university. The figures are alarming and emphasize the need of working tools to alleviate this problem. It seems that even work one is passionate about and inspired by, can be exhausting. In order to succeed in academia, it requires more than a brilliant mind. For a long and well-balanced career, also skills to cope with stress and pressure are needed. Scientific institutions should attend to the mental health needs of their students, graduate and post-doctoral students to ensure good quality research, healthy and functional, research groups. Success in these areas reflects positively on the reputation of the institution itself.

Knowledge of how to handle psychological stress, pressure and frustration is readily available but somehow, young researchers do not seem to make use of this information. One reason could be that the scientific world has always had a soft spot for the high achiever and the never sleeping passionate workaholic. One never can publish enough is a thought very familiar to researchers, and this thought gives way to neglecting oneself and act as a hindrance to finding out what one's personal healthy work-life balance should be.

Considering well-researched mechanisms to handle stress, they include: (1) changes and actions for the individual to make in one's life, (2) changes and actions the supervisor is responsible, and (3) changes and actions on the level of the whole research groups.

1. *Involving oneself in other activities* (sports, hobbies) regularly, on a weekly basis, to ensure there is something else to think about than research matters. Further, developing techniques to monitor progress, and rewarding them are important.

2. *Senior researchers have a responsibility in the guidance* of junior research staff and PhD-students because they act as role models, but some of them are themselves overworked and suffer of a lack of healthy work-life balance. A supervisor would profit of giving more emphasis on his or her role as a teacher and guide. Further, a supervisor may need to think about, how to accept that a doctoral student who may not stay on the team after the doctorate?

3. *Social support, embracing failure and reducing stigma.* Social support is vital in the prevention of burnout. Therefore, supportive social contacts should be given emphasis. A research group can act as a supportive network itself. Another option is the creation and continuation of support groups consisting of members of diverse faculties on campus. Further, another skill useful to develop inside a research group is embracing failure. Third, an active stance on the campus to reduce stigma towards mental health issues makes it easier for individuals with mental health problems to seek professional help.

Sheelagh Carpendale *is a Full Professor, who, in 2018, is shifting in from University of Calgary to Simon Fraser University. She is the recipient of several major awards including the prestigious E.W.R. Steacie Memorial Fellowship from the Natural Sciences and Engineering Research Council of Canada, the British Academy of Film and Television Arts Award (BAFTA) for Interactive Learning, Albertas ASTech Award for Innovation in Information and Communications Technology and the Canadian Human Computer Communications Society (CHCCS) Achievement Award, and she has been inducted in the ACM CHI Academy. She has been Papers Co-Chair for IEEE Information Visualization (InfoVis) and has published over 300 peer reviewed papers, many of which have received awards. Her research focuses on information visualization, interaction design, and qualitative empirical research and draws upon her combined backgrounds in fine arts, design and computer science, benefiting from the rich cross-fertilization of ideas amongst these fields. By*

studying how people interact with information both in work and social settings, she works towards designing more natural, accessible and understandable interactive visual representations of data. She combines information visualization, visual analytics and human-computer interaction with innovative new interaction techniques to better support the everyday practices of people who are viewing, representing, and interacting with information.

People are increasingly discussing how academic life is overly stressful and that it is extremely difficult to develop a healthy work/life balance. A contributing factor is that academic life has changed considerably over the years. Long ago the idea of tenure emerged to provide professors with time and safety to think independently. Now tenure is used to drive activities towards the expected and the accepted. At one time, whole institutions followed the idea that it was important to society that professors be able to think about things not everyone agreed with. Now institutions and granting agencies, make decisions about what type of research they want to support. This of necessity means that many topics, perhaps important or even crucial topics, are not supported. Thirty years after Ursula Franklin raised the issue of unwanted knowledge, we have even larger swaths of unresearched areas. All this adds up to a need to do research that is acceptable to your reviewers be they peer reviewers for publications, institutional reviewers for tenure and promotion or grant reviewers from your country's granting agencies. The result is quite different from the initial idea of freedom to think and tends to be accompanied with considerable pressure to perform. This pressure to perform leads to long hours and interferes with work/life balance.

John Stasko *is a Regents Professor in the School of Interactive Computing at the Georgia Institute of Technology, where he has been on the faculty since 1989. He is a widely published and internationally recognized researcher in the areas of information visualization and visual analytics, approaching each from a human-computer interaction perspective. Stasko was General Chair for the IEEE VIS Conference in 2013 in Atlanta. He received the IEEE Visualization and Graphics Technical Committee (VGTC) Visualization Technical Achievement Award in 2012, and was named an ACM Distinguished Scientist in 2011, an IEEE Fellow in 2014, and a member of the ACM CHI Academy in 2016.*

Visualization researchers, or even more broadly computer science and STEM researchers, embark upon careers that are likely quite different than what the average citizen believes. Many researchers work long hours, oftentimes outside the traditional weekday times. Furthermore, the career is filled with failures – papers that are rejected, projects that never blossom, and grants that are declined. Its highly probable that such failures will outnumber the victories too, even for highly successful researchers. All these factors contribute to a career with far more stress and anxiety than most would expect.

What can be done to lessen these problems and help researchers maintain positive and healthy outlooks on life? As a community, we need to foster a more welcoming and friendly atmosphere. Much of our culture is embedded in evaluation, competition, and criticism. Feeling like you're being judged all the time is a difficult situation to endure. We must find ways to encourage, nurture, and help researchers, particularly young ones new to the field. Establishing mentor programs, forming communities of colleagues in similar career circumstances, and creating events and venues that encourage interaction and engagement, are just a few examples of potential steps in the right direction.

To the researchers themselves, my advice is more personal. Simply make sure that the job and your career are not the totality of your life. It may be a cliché, but those things should be what you do, not who you are. Make sure to foster interests outside of your work and research. Enjoy hobbies, pursue your interests, and most importantly, ensure that you devote time to these activities. Additionally, you need to pursue, maintain, and nurture friendships and relationships, particularly with people outside of your career discipline. Your friends are people that you can lean on when the inevitable challenges and difficulties arise. We all fail, but when those setbacks occur, it is important to keep them in perspective. Having friends who understand more deeply what you are going through can help you navigate through those difficult times.

Niklas Elmqvist *received the Ph.D. degree in 2006 from Chalmers University of Technology in Göteborg, Sweden. He is an associate professor in the College of Information Studies at University of Maryland, College Park, MD, USA, and the Director of the Human-Computer Interaction Laboratory.*

Living with Rejection   Sometime in the early spring of 2002, I received my very first peer review. I had submitted my first academic paper to SIGGRAPH in January that year, proudly packing six paper copies of the article and six NTSC video tapes into a big box and sending it off overseas, fierce hope burning in my chest. It was a rejection, of course, the stark message not just dashing that hope, but actually bringing me to painful tears with its harsh, almost cruel words. It would take another year to receive my first paper acceptance to a peer-reviewed conference.

SIGGRAPH 2002 was my first rejection, but not my last by a long shot. Science is an unforgiving field, and peer review a brutal teacher. While I may not have shed any more tears over rejections since that first time, there have been countless emails starting with the words "we regret to inform you", and some very hard lessons learned along the way. We academics receive a lot of negative feedback during our careers, with preciously little positive feedback to balance it out, so self-preservation dictates that you develop coping mechanisms for all that negativity. For what it's worth, here are some of mine:

1. *Don't (immediately) read negative reviews.* Don't torture yourself. Hold off reading them for a couple of days, and read them only when you have processed the outcome properly.

2. *Don't check your (perceived) competition.* Incessantly scouring the websites and tweets of other people in your perceived "cohort" to see all their successes is an easy road to having a bad day. Fear of missing out is a thing even for science, where you are always kicking yourself over missed opportunities. Remember that people only post about peaks, never lows.

3. *Revise and resubmit.* A rejected paper is an opportunity for sending a stronger and more mature version to a new venue with much less effort than writing a new paper from scratch.

4. *It's not personal.* You are not defined by the papers you submit. A rejection is never personal, and, however much you put into it, a single paper is expendable. You can always start fresh tomorrow with a new paper, and no one will be the wiser. Finally, reviewers are merely people, have subjective opinions, and can be wrong.

5. *Be kind to yourself.* Science is a job, and, for some, a passion, but should not have to be an all-consuming calling. I find that the most important factor for success is the quality of the time I put in rather than the quantity. Take care of yourself and do things you enjoy outside of work.

Rejections used to hurt like hell for me. They still hurt a little, but I've grown thicker skin over the years. The real trick is to keep trying.

G. Elisabeta Marai *is an Associate Professor at the Electronic Visualization Laboratory at the University of Illinois at Chicago. Her research has been recognized by peers with multiple outstanding research awards, including outstanding paper awards, an NSF CAREER award, and multiple NSF and NIH R01 awards. She has received multiple teaching awards for courses that blend teaching and research. She has served as General Chair and Program Chair for the BioVis conference, as an Associate Editor, program chair, and program committee member.*

From the many stressful issues that plague young visualization researchers (and not only them), I would like to talk about handling manuscript and grant proposal rejections in the context of a successful career. I will discuss giving constructive feedback, recognizing a poor quality review, and strategies for emotionally handling rejections. I am grateful to have collected this advice, over the years, from a variety of sources, including the biomed field and minority support groups. I will also gladly answer any questions about advising vulnerable students and helping them find professional success, about work-life balance, unconscious bias, providing opportunities to minorities, growing an interdisciplinary research group, and about my experience at an institution with 20% female faculty in computer science.

Helwig Hauser *graduated in 1995 from Vienna University of Technology in Austria and in 1998 he finished his PhD project on the visualization of complex dynamical systems (flow visualization). In 2003, he got his Habilitation at TU Wien, entitled "Generalizing Focus+Context Visualization". His research has been repeatedly awarded, including the Heinz-Zemanek Award by OCG and the Dirk Bartz Prize for Visual Computing in Medicine from Eurographics. With about 200 refereed publications and over 9,000 citations (h-index>50), he is an active and established member of the international visualization community. After first working for TU Wien as assistant and later as assistant professor (1994), he changed to the VRVis Research Center in 2000 (having been one of the founding team), where he led the basic research group on interactive visualization until 2003 before he became the scientific director of VRVis. Since 2007, he is professor in visualization at the University of Bergen in Norway, where he built up a new research group on visualization.*

Dealing with Failure in (Successful) Research Failing is omnipresent is scientific careers (rejected papers, rejected project proposals, etc.) and how to cope with failing is much more the question than how to avoid it. It is usually hard to face very high expectations on the one hand (to succeed with a PhD project, for example, one attempts to contribute some significant results on the top of what all the world has managed so far) and the reality of repeated failing on the other hand (especially, when aiming for high-quality successes, the international competition is very hard, and time pressure does not ease the situation neither). Eventually, often motivation, dedication, and endurance are decisive factors for success in science (Thomas A. Edison quote "Genius is one percent inspiration, ninety-nine percent perspiration."), making it usual that lots of extra efforts are invested in order to succeed (given fierce international competition, it is difficult to imagine, how this situation should ever be remedied, for example, by regulation). On the one hand, this gives hope: If you are doing, what your heart tells you, i.e., if you are thoroughly motivated, then hard work can make a lot possible, even with a lot of failures. On the other hand, this situation amounts to a difficult dilemma in many respects: scientific work is less predictable (in terms of success) than other work, engaging in high-risk, high-gain research carries—by definition!—an increased risk for failure, and other life aspects (family life, etc.) seem very difficult to account for (despite modern regulations!). As a consequence, it is also difficult to evaluate failures in science: Often they are just "normal" and with extra efforts we can overcome them; sometimes, however, we must understand that a change of direction is the better decision.

Daniel Archambault *is a Senior Lecturer at Swansea University. After completing his PhD in 2008 at the University of British Columbia, he was a postdoctoral researcher at INRIA Bordeaux Sud-Ouest (2008-2009) and University College Dublin (2010-2012) before joining Swansea University in 2013 where he is now a Senior Lecturer. His primary area of research is graph visualisation and he has made significant contributions to dynamic graph drawing, machine learning and information visualisation, and social network analysis.*

Reflections of an Experienced ECR in a Time of Uncertainty
This story begins at the end of my PhD ten years ago in the summer of 2008. I post-doc in INRIA Bordeaux Sud-Ouest and was going to spend a few years in Europe before returning home. Little did I know, the world was about to enter one of the most economically (and politically) unstable times in generations. Collapse of Lehman Brothers. Subprime Mortgage Crisis. Eurozone Crisis. War on Science (in Canada). Irish Bailout. Brexit. As a consequence, there were few academic positions, competition for them was fierce, and postdoctoral contracts were short.

Instead of dwelling on the past, I choose to look to the future. In particular, in this panel, I would like to discuss the lessons I have learned during this period moving country to country with my newly-printed PhD to finally become a faculty member. Given this experience, I will primarily focus on how we can support young researchers who are looking to go from temporary postdoctoral researchers to permanent faculty members. Along the way, I'll touch upon things that I have learned personally through this journey that can help ECRs in similar positions and suggest ways that senior members of our community how they can better support the next generation of talent.