

## Turning the Paradigm Upside Down: Postdocs as Principal Investigators' Mentors

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### Abstract:

The mentor-mentee relationship, analogous to that between a postdoc and a principal investigator (PI), is looked at from a personal standpoint in this discourse. The readers are invited to think of the benefits of a more active role of mentees that arises from turning the relationship between mentors and mentees upside down and seeing the mentees as responsible for mentoring their mentors. Whether this is all a fancifully inverted standpoint or the real state of affairs, the author knows not. Be that as it may, it is concluded that one does not necessarily need to adopt a powerful authoritative position to exert influence that changes the given systems for better. Some of the essential traits of excellent mentors in the modern age are also compiled as guiding lights of a kind.

"Undergraduates are indulged, but post-graduate aspirants to an academic career are strictly disciplined as if in preparation for the authority they will themselves have to wield later. As a group they stand in the most invidious position in the whole multiversity system, between the students who are cared for and the faculty who are feared or revered. They tend to be the most ill treated. Abused and exploited, but they are the least capable of asserting their rights or defending themselves since they aspire to the very positions of authority and power which are exerted against them"

Harry Redner, *The Ends of Science*

### Turning things on their heads

Everybody is a mentor to someone. Whether you are a teacher, an academic researcher, a parent or a peer, and whether you are aware of that or not, you are mentoring someone in this grand web of life. In essence, everything we do imperceptibly sets an example for other people to follow. Of course, the more hierarchically influential we are, the more people around us spontaneously adopt our traits, from the way we communicate to the scientific methodologies and exploratory styles that we pursue. However, even when we find ourselves at the bottom of the hierarchical pyramid, our influence on everyone, including those resting at the top, is finite. This is why the thesis I propose hereby is a reverted or extended statement that tops this short discourse. It is that everybody is a mentor to everyone else and that every mentee is therefore secretly a mentor of her mentor. The hierarchical causal chain is thus turned into a loop, which can either be vicious or the one along which we could spin like dervishes and enter ever more enlightened states. After all, if the history of science teaches us something, it is that turning things upside down, from their stable foundations to their head, is what comprises the most creative approach to scientific discovery (Kuhn 1962).

The analogy I will propose to illustrate this point is the one of a parent and a kid. Parents do mentor their children; that is an undeniable fact. However, it is often overlooked that kids have a pivotal role in molding their parents' personalities from the earliest stages of their lives. They secretly and imperceptibly guide the progress of their parents across multiple planes – behavioral, creative and spiritual. Moreover, kids are wonderful reminders of how honestly and wondrously one should approach the world, as opposed to clichéd, insincere and inherently toxic behavioral modes into which grownups tend to fall. Yet, despite these grand reminders in their plain views, many are parents that could be found feeling stuck against the wall of life, as if they have fallen into traps of parenthood, going against their wishes or sacrificing them for the sake of selflessly giving birth to a new earthling, especially if their relationship with the kids has become awkwardly distant over time. At times,

they may then reconsider their lifetimes and, as perplexed as they could become, wish if they could go back, somewhat similar to George Bailey in the Christmas classic, *It's a Wonderful Life*. Then, however, these little mentees could step up, innocently and benevolently, and change things for better, just like the angel in this classic movie does, magically infusing the nectar of happiness in their wary worldviews.

If we zoom now into an academic environment, yet another realm in which powerful urges to sow the seeds of intellect onto parented progenies of a kind thrive, we could notice the following. Just as perceptions gradually vanish into a blind spot when we never lose them out of sight, so do mentors often tend to forget how it had felt being a disempowered postdoc and tend to act as if they have never been one. It is no secret that postdoc associations have sprouted all over the country mainly because postdocs felt that they should be gathered and had their dissatisfaction regarding abusive mentorships that they underwent freely shared. The postdoc association at University of California, San Francisco (UCSF) was, for example, founded as a "grassroots organization seeking improvements in the training and work climate of postdocs" (Sambrano 2000), while one of its former presidents clearly asserted during an interview with *Nature* magazine journalists that "there are some awful principal investigators out there" (Wickware 2000). Countless postdocs seem to be sharing the sentiment with a UC San Diego postdoc who had a plenty of independence and opportunities to advise students and teach in the lab and the classroom by the time he earned a PhD degree, but eventually noticed the following: "I did everything a faculty member did. I was ready to go. Then I went into a postdoc and became a *nonentity*, especially with the culture and the lab I went into" (Russo 2004). Most of the postdocs, however, learned to get along with bad mentoring experience, unwilling to do anything about changing this distressing state of affairs that undoubtedly takes toll on their creativity and a sense of personal and professional fulfillment. Partly, this is because more than two-thirds of postdocs are foreigners (Lin 2011), less eager to be involved in changing social features officially foreign to them. Other than that, it appears as if a phlegmatic bug has gotten

hold of postdocs, who thus tend to accept the fact that the current generation of mentors was never really trained to be that and could not be therefore changed for better. For, the well fed never believe the hungry, as some might say, and all that is consequently left is either a generationally widespread state of down or inordinate whining that most of the time only aggravates this fundamental divide.

I cannot number all the cases of postdocs who complained to me informally about things their mentors did or said during their research appointments. I personally had the drafts of my manuscripts tossed in the air followed by an avalanche of cursing words, openly told that I would never become a productive scientist, had said to my face by a mentor that I had been "given up on long time ago" and even explicitly asked to "follow orders", let alone threatened with an early dismissal when I confronted my mentors' scientific opinions with alternate interpretations of phenomena we investigated. I have also witnessed multiple postdocs experiencing deteriorated mental and physical health, allegedly solely due to mistreatment by their mentors. Yet, being passive is the worst approach we could pursue with respect to apparent maltreatment on behalf of our mentors. After all, the old Leonardo da Vinci's statement that "nothing strengthens authority as much as silence" can be confirmed in innumerable academic circles wherein irrational bias that often takes the form of plain bullying persists mainly because those who have witnessed or directly experienced it are too frightened of the thought of openly stepping up against it (Field 1996). Yet, despite the obvious risks for one's career that such courageous resistance bears, it should be our ethical duty to find an imaginative way to heal what is nothing but a quickly spreading disease of self-defensive, egotistic stances within university structures undergoing the transition from centers for selfless dissemination of knowledge to centers for intellectually self-protective entrepreneurship. For, a single authoritarian person suffering from these ills of selfish territoriality is enough to spontaneously poison innumerable subservient minds, without the latter ever noticing their subjection to disease, acting like frogs cooking themselves alive in a slowly heated pan. The approach I have argued for is thus based on taking the initiative and, instead of passively-aggressively beating around the bush, knocking on the PIs doors and taking the role of none other but a mentor, of someone who is responsible for the self-centered soul-corrosion that some of the PIs in our views obviously undergo. Mutual broadening of perspectives could be achieved thereby, as opposed to today commonly narrow, petty, hypocritical and self-interest-oriented involvement in these relationships.

For, it is no secret that when one side in a relationship assumes a victimized position, it is much easier for the other side to exploit it. If rebalancing of this lopsided state of affairs was accomplished, a greater level of mutual respect would be given rise to: postdocs and PIs would see each other neither as easily replaceable cogs in the workings of the lab nor as inherently ruthless hegemonic tyrants, respectively, but as unique human creatures, as imperfect and likable as they are. The battle that is to be fought is thus partly about crushing the current stance from which the PIs tend to see merely a cheap

working force in their postdocs. PIs earn mentoring credit on every postdocs that passes through their lab, and yet quite often they are so focused on accomplishing the aims of their grants that they forget to invest an effort in crafting skills on which a sense of professional fulfillment and satisfaction, let alone scientific creativeness, depend as much as it depends on the technical expertise on which most of the narrow-minded PIs solely insist (National Postdoctoral Association 2010). With the number of postdocs expected to continue to rise in the foreseeable future, increasing awareness of the fallacies in the domain of mentorship will be vital in ensuring the working satisfaction of both sides and preventing grounds for potential conflicts of interest. The 2004 Sigma Xi survey came to conclusion that it would take a \$20,000 increase in salary to have the equivalent impact on job satisfaction as merely improving the quality of mentorship (Scudellari 2010), and all parties representing postdoc rights, from HR managers to postdoc associations to labor unions, ought to be aware of this fact.

The essential way to resolve hostilities and traces of personality clashes that have arisen or are about to arise in the relationship between a postdoc and his mentor are to talk about them. For, every conflict is known to entail awkward or missing communication between parties in question (Woolston 2002). Typically, unless this communicational gap is bridged, the roots of the conflict tend to spread ever deeper and become harder and harder to uproot. Hence, to talk is quite often to heal when it comes to hostile mentor-mentee relationships. Such talking about important issues of mutual interest was proposed by means of the Individual Development Plans (National Postdoctoral Association 2009) whose usage is nowadays, however, more an exception than a rule. The benefits of their confidentiality are overcome by the fact that they remain the property of the university. They also do not allow for a detailed upward assessment in terms of a careful examination of the mentor's approach, aside from leaving a plenty of reasons for postdocs to hesitate using them, given the double-edged swords that they are. For example, if I were to write in one of those forms that I disliked seeing my mentor "coming up with an insolent smirk on his face to let me know that the Department rejected the institutional support for my pending K99 award application", "implicitly announcing that I am not needed in his group after I corrected his knowledge of basic math", "complaining about my lack of dedication to bench work when the number of experiments I carried out surpassed multiple times those of other postdocs at that time", "openly prohibiting the publication of review papers I wrote in my spare time", "referring to the lab equipment as his and his only and prohibiting others from using it, while disregarding that the funds for its purchase came from the NIH, that is, from the taxpayers' hopes that specific illnesses that strike humanity would be found remedies for, wishes which such a self-centered attitude has stood in the way of", "claiming that I 'offer my opinions as if I was a PI and not a postdoc' in a negative, not positive connotation", "stomping over my eagerness to ambitiously progress in the field by multiple means", "demanding unquestioning obedience, while disregarding that the progress of scientific thought vitally depends on its free exertion, particularly when it opposes the

reigning paradigms”, “being an insecure individual who perceived me as a threat and therefore territorially singling me out as the one that had to go despite the exceptional productivity and interest for research I exhibited”, even though these might have all been fairly truthful statements from my perspective, they would not necessarily lead to betterment of the mentorship in question. For, it is deeply ingrained in our cognitive nature to be unable to see the eye that sees the world and thus be blind to our own manners by means of which we may have insulted the other side in question. Unilateral accusations, free of any self-criticism, are thus often akin to plucking a thorn from another’s eye while a whole log lies dormant in ours. Another reason is, of course, that postdocs, many of whom come from the developing countries and see their actual appointments as the only ticket to the developed world, are quite often eager to accept any maltreatments on behalf of their mentors as an unchangeable *status quo*. On the other side, the bullying side, especially if tenured, feels protected and backed up to a greater extent, financially and professionally, having open grounds for manipulation of the inferior side for its own purposes. Although it may appear crystal clear to many postdocs that their manipulative and merely result-oriented PIs epitomize contradictions with Kant’s categorical imperative, which dictates that we ought to see others always as ends and never as a means to an end with respect to our purposeful action, chances are that there won’t be official administrative or legislative routes offered to them to prevent this profoundly unethical treatment they have been subjected to. Any open comments that would expose the inappropriate acting of the bullying mentor thus inevitably pose greater threats for the supposedly bullied postdoc. For a similar reason, there are concerns that setting up any transparent forums for review of individual mentors, modeled according to Yelp or other similar websites that have a great impact on the service industry, might lead to aggravation, not amelioration, of the existing frictions. Be that as it may, Bertrand Russell banged his head against the wall trying to figure out the answer to Juvenal’s question, *Quis custodiet ipsos custodes?*, and if the feedback-looped biological systems all around us, irrespective of their complexity, teach us something, it is that every cause is an effect and every guardian is guarded but none other by those that she guards. Hence, unless PIs are prompted to turn to their mentees as mirrors in which they could see a reflection of the quality of their own mentoring approach for the sake of their improvement, and unless postdocs are simultaneously urged to understand the mentor’s path and genuinely care for it as much as to lucidly shed signs when things go wrong and out of control, the gap between the two will remain deep and hardly crossable at times.

The world abounds with books and guidance on good mentorship more than ever before. From Zen stories of the past to the rather dry manuals of the modern times, many more texts than those explicitly teaching mentorship in the academic realm could be useful in this sense. Innumerable are also questionnaires one could use to evaluate how tough, brutal or even abusive a mentor is (Daniel 2009) and they could be undoubtedly used in these mutual evaluations. Does

your PI treat you as a servant? Does he require his standards to be met before giving a compliment? Does he criticize low-quality work from you? Does he demand that you constantly perform with excellence? Does he object whenever you take initiative by offering the direction in which the project ought to be taken or discussing the possibilities for collaboration without his consent? If the answer is yes, then a plenty of things could be corrected in the mentorship you experience, according to some of these management manuals (Daniel 2009; Davenport *et al.*, 2005; Kohut 2008; Ragins and Kram 2007). Yet, remember that people are no dummies and one of the most insensitive things one could do is to verbally preach by openly pointing out errors and flaws of another’s approach, while on the other hand oftentimes tending to exhibit the same mistakes. Also, how we put our message across always determines how well it will be absorbed; when our comments are displayed accusatorily and angrily, they will find little fertile ground in those to whom they are directed, whereas when they are given with love and respect, they tend to melt even the steeliest gates of ego along their stream. Many are thus manuals today that teach mentors to substitute statements such as “I don’t like the fact that you show up in the lab whenever you feel like it” with ones that may go like this: “If you arrive at unpredictable times, it is difficult for other people in the lab to know when they can talk to you. Many people depend on your expertise and need to know when you are available” (Guberman *et al.* 2006). These handbooks, however, most often focus on the surface of our expressions, neglecting that once the foundations of selfless love and respect are set forth, all of these will naturally flow out of our mouth; hence, the list of fundamentally important traits of outstanding mentors compiled in the section that follows.

Therefore, be creative and aware that subtle signs placed on other people’s paths are more than seldom enough to trigger their introspection, which is a much less resistant path to change than that based on explicit moralizations. Heading over to the opposite extreme from the one of passive obedience and becoming openly arrogant and hostile is equally little constructive. The only fruitful approach to effectively introducing change in the substratum of reality has always been metaphorically represented in my head with a sunrise, during which the Sun never eclipses the night stars instantaneously, but slowly and almost imperceptibly. This natural image has served as a reminder that a concoction of (a) conformity arising from our respect of another and (b) revolutionary thirst to enlighten things around us arising from our visionary creativeness ought to be blended in every progressively pursued walk of life (Uskokovi 2009). No recipe other than this broad, systemic guideline will be given here.

Before engaging in this creative mentoring the mentor, I would like to list what in my opinion are the traits of an excellent mentor. Of course, since mentees are also mentors of a kind, they too ought to look after finding these traits within themselves. Although with the passage of time they may be increasingly seen as outdated, they stand in front of me now as monuments of timeless importance.

### The traits of outstanding mentors

Excellent mentors know that *no two intellects are the same*. A unique guidance and a special answer therefore ought to be given to each person at a time. Hence, an infinite versatility of their mentoring approach which at the same time fosters maintenance of their own flexibility and ability to empathize. From a strict cognitive perspective, each one of us is a universe unto itself, a planet akin to those the Little Prince curiously jumped to in his adventure (Saint-Exupery 1946). Therefore, the key that unlocks the gates of knowledge in each single person's head is one and only at any given time. In other words, the plasticity and constant change that our cognitive apparatuses are subject to implies that these keys also have to modify their form with the passage of time. As a reward of one such approach, boringness and drowsiness awaken in students in face of someone who always tells the same story and treats everyone the same are substituted with a sense of specialness, a great motivator for life, in the students' heads. When the Nobel Laureate, Steven Chu, was asked if there could be one single trait of his prime mentor and teacher he would like to copy, he replied: "Yes, it would be an ability to make each and every one of my students feel special" (Kreisler 2004). Undoubtedly, the same creative spurs are spontaneously dropped behind the trail of our teaching efforts when we treat everyone like a uniquely precious face of an infinitely faceted diamond that Nature is.

Great mentors thereupon fully *understand the merits of diversity*. Whereas most old-fashioned mentors and supervisors would try their best to sanction and eradicate any signs of personality traits in their mentees or subordinates that differ from their own, a mentor that understands the benefits of versatility of approaches to exploring and grasping reality as well as the inherent threats on sustainability that monotony and uniformity exert lives up to the guideline given by Warren McCulloch: "If I have any disciples, and you can say this of every one of them, they think for themselves" (Beer 1999). This perspective brings us over to the teaching method of Robert Irwin, which yielded a number of stellar artistic careers, described by the visual artist himself: "I would think that the most immoral thing one can do is have ambitions for someone else's mind... Once you've learned how to make your own assignments instead of relying on someone else, then you have learned the only thing you really need to get out of school, that is, you've learned how to learn. You've become your own teacher" (Weschler 2009). A similar viewpoint stands written in my recent book, *A Star*, "Valuing flocks of followers gathered around one's feet rather than independent thinkers who are brave enough to stand up for their own opinions in scientific confrontations serves as a proof of the inexorable egotistic nature of these false teachers that often take the role of leviathans within contemporary academic circles. Like those sea monsters that guarded the entrance to hell, learning by the example that they, themselves, are setting leads one to hellish reigns of pharisaic and monstrously egotistic acting in the academic arenas. Unlike them, the guardians of the gates of Heavens are such that they let every single creature pass through it, liberating each and everyone from the shackles of ego and preparing them for the free and unconstrained flights of spirit. Yet, the

genuine teachers of the world, having elaborated the thesis that progress always entails breaking the laws of ordinariness and paradigmatic reasoning as well as that the ultimate success in teaching consists of raising generations of thinkers who will surpass the very teachers and prove the teachers' obsolescence with their acts, are intrinsically glad whenever they face intellectual troublemakers who would readily oppose their opinions" (Uskokovi 2011).

The second essential trait is, naturally, *openness to constant improvements* that come from guess whom? None other but the pupils and mentees themselves. In a Grantland cartoon, a young professor asked about the mentoring program he has taught answers with the following witty words which hide some of the keys to successive and inspiring lecturing: "Great! I got a lot of insights, I developed new skills, and I think the person I was mentoring learned something too". Of course, the real mentors are not ashamed to admit that they always look after learning something new by dissemination of their knowledge. It is as if some grand psychological principle whereby opening of the gates of knowledge so as to expel some of its contents onto others promotes inflow of new patterns of knowledge lies dormant here. Indeed, whoever had a chance to teach, be it in a classroom full of people or one-to-one in a quiet room, could have noticed how the most productive teaching moments are always followed by incredible insights arrived at by the teacher himself. From restoring a sense of creative involvement of each and everyone to vanishing of a sense of an untouchable and utmost human authority hanging over the students' heads, giving rise to a sense of self-responsibility that eclipses the spirit of sheepish and unquestioning followers, benefits of such a co-educational approach are indeed many. Openness to other people's infusing the essence of their worldviews and even changing our deepest values at times is a trait of only the greatest masters on the lecturing stage and in the world of teaching and mentoring. After all, as the co-creational thesis of which I have extensively written suggests, every form of creativity in life is inextricably related to an act of co-creation. Instead of attempting to thoroughly transform the blueprints of our imagination into reality, we should keep our senses open and let the environment spontaneously offer incentives to be engrained in our creative products.

For this reason, great mentors also pose themselves as *participants and facilitators of the progress of their mentees* rather than an egotistic force hovering over their heads and exerting mental pressure to produce thereon. "He never told us that we must do this or that. He never made us feel pressured. Instead he worked together with us long into the night", Steven further described the mentoring style of his teacher. By means of one such approach, emphasis is naturally placed on finding fulfillment in the act of searching rather than that of finding, as genuine wonder becomes ignited in the students instead of mere cravings to reap rewards. Promotion of a sense of self-responsibility and independence is also what underlies awakening of creative wonder and selfless curiosity behind the pupil's eyes. And yet, it is the balance between this self-responsibility on one side and faithful leaning with our ears and hearts onto the voices

and advices that our tradition whispers to us on another that ought to be reached by the students. Hence, having mentored students myself in the present and past, whenever I have an impression that this balance has been lost in them, I poke them and shift their attention back to it. Hence, when I notice someone overly relying on what I, as a mentor, advise them to do, starting to pave the way for her being to become a passive little robot, I propose a flunk and shocking idea which, the student will realize, is worthless following. This I find to be a useful method for breaking their tendency to settle down in a passive attitude of blind followers. "I find great difficulty in understanding a postdoc who will go to a lab and will work on a project that's specifically to do with a PI's grant" (Russo 2004), James William Nelson, a professor of cellular physiology at Stanford University School of Medicine, accordingly opined. "Where's the independence in that", he continues freely urging his students and postdocs to "use and abuse" his lab, to break the rules of mere obedience and walk towards pursuing their own research dreams. For, "postdocs should not be copies of their advisers", as Keith Yamamoto, Vice-Dean for research at the UCSF Medical School, instructively observed (Russo 2004). Even industrial milieus, which have traditionally pursued a less flexible mentoring approach than the academic circles, have apparently recognized the merits of yielding more creative freedoms and autonomies as paths to independence to the postdocs, as could be seen from the words of a Genentech research executive: "No one from management can ask what a postdoc's work has to do with the mission of the company. They are free to work on whatever intrigues them" (Kaplan 2009). Correspondingly, a student whom I mentored in the lab was stunned when I added once how she should not take seriously everything I say. "You should trust yourself, first of all. But again, do not trust everything I say". With the latter remark, I merely pointed out that going exceedingly in the opposite direction, that is, towards becoming reliable only on her own inner voice, ideas and strengths is not desirable either. One should never become ignorant and blind to the subtle messages that the heart of our scientific tradition beats with, and to which all of our creative efforts ought to be dedicated, after all. For, it is not mere Wonder that drives the wheel of science. It is Wonder and Love, that is, a genuine curiosity about the way Nature works balanced with a desire to produce things that will elevate human spirits that stand entwined in togetherness that is impossible to disentangle at the heart of *bona fide* scientific endeavors. Should we not follow the line of this balance, we could grow into one of a limitless number of epitomes of a type of mentor familiar to many of us, able to think with a fascinating clarity, but having let the love of science overcast the love of man inside of his heart, thus becoming gentle and sensitive when swimming in the sea of scientific thought, but unkind and horribly abusive to people around him.

Posing oneself as a co-creative participant in relationship with mentees is the trait that makes me revive the question I posed to the UCSF community in a magazine article which subsequently became subjected to censorship and rejected, "Why do mentors rather put their mentees into chains and make them slaves of their own servitude to the funding

agencies instead of spreading their wings for individual flights into the skies of science?" Now, although sensitive mentors do tend to exert more direct influence to those who seem to be aimlessly and insecurely wobbling along their scientific path (Guberman *et al.* 2006), they hardly wait for the moment to give their mentees' the power to choose and decide in which direction the research is to be taken. For, they know that both zero power and absolute power ultimately bear no responsibility for the state of the systems to which one belongs or over which one governs, respectively. To avoid such mutual withering of the senses of self-responsibility that gradually extinguishes interests in creative engagement, constant efforts to redistribute and rebalance powers are needed, which in case of mentors requires routine renuncements of power and endowing others, pupils, mentees and coworkers, with it. Such a genuinely anarchistic renouncement of authority is a vital trait of all those who truly wish to elevate their disciples above them rather than use them as slaves for fulfillment of their own egotistic aims. And as the aforementioned book of mine states, "If you have begun to wonder by now what is the magical key that helps teachers that follow the mentoring approach idealized on these very pages avoid slipping into pure carelessness while unpretentiously leveling themselves with respect to their disciples and refusing to accept the role of any authority, it is the grandest cosmic force of them all, the one that Dante Alighieri described as the centerpiece of the cosmic clockwork around which all the planets, stars, objects and creatures of the Universe revolve in the final verses that document his journey through Paradise: Love" (Uskokovi 2011).

"The excellence in mentoring students on podiums of science is based on the same flowery essence as the immaculate approach to parenting is, which is an unconditional love for our sons, daughters, mentees and followers and a blasting desire to launch them beyond the farthest stars of ideas and creativity that our very beings have grasped. Just as parents who always measure themselves against their children and subconsciously make sure to stand in the way of their development when they are about to transcend the accomplishments of the parents will never become stellar and spiritual guides for the little ones, the same can be said for scientific mentors whose primary aim is not to let any of their mentees step on their territory and approach them too closely in the brilliancy of their knowledge" (Uskokovi 2011).

"With one such elevating of the disciples to the stars rather than tying them down and uprooting their proclivity to independent thinking, as most insecure and self-defensive teachers of the world do, a great sense of respect for the tradition arises in the hearts of the disciples. Disciples always recognize whenever their teachers secretly aim at closing the gate to the inflow of new knowledge and block their progress beyond that which they, themselves, have achieved, and ultimately take that as a mistrustful and dishonest way of teaching. However, by letting the disciples fly further than their teachers have ever been, the little ones become infused with true respect and love, which, as we may know, serves as a rocket fuel for their enthusiastic and selfless flies over the

skies of science. Only when their teachers, be they professors at school, parents or older and more experienced friends, sacrificially elevate them and launch them to stars, the pupils become fully aware of how great and worth of respect the pedestal of tradition of human reasoning and working upon which they stand is. Nothing around them then becomes taken for granted; instead, each manmade object around us is seen as a monument to human sacrifices, devotion to another and benevolent hardships. Although they are implicitly taught that rebelliously going against the stream is the key to creative acting, they are thus also reminded that failing to watch the world through the eyes of our tradition, through the eyes of those whom we know and who are so immaculately dear to us as well as those whom we have never seen but who have opened ways for the existence of our being at this very place, right here, right now, equals to an ethical suicide and irrational jumping off the cliff on the spiritual path of ours" (Uskokovi 2011).

Finally, we have arrived at the doorsteps of the trait that ought to stand at the beginning and end of it all: *endlessly exercised empathy*. Nothing is more important than it. For, mentorship without selfless love of one's mentees predestines the former for permanent incompleteness. Biological creatures as we are, I believe that we possess secret innate sensors that help us feel more encouraged to creatively grow when we feel the waves of love being radiated towards us. Ceaselessly training oneself to compassionately see the world from the eyes of another is thus the final trait on my list of attributes that endow magnificent mentors. It is the trait that requires constant practice, for as we grow older, ever more challenging jumping across the generational gap that extends between elderly and experienced mentors and juvenile mentees will be. And yet, like the Little Prince who sustains its petite vitality by hopping from one planet of human worldviews to another, sympathizing with them all, so ought we to constantly engage in one of the ultimate adventures of our lifetimes, complementary to the scientific one, which is managing to find empathic unisons while seeing the world from the eyes of another. For, only if the trains of our creativity travel along parallel tracks, one of which is Love, and the other one of which is Wonder, can we hope to see the fruits of our being fall from our arms in abundance to the world.

Reverting the loop again

Knowing all of this, what can a poor postdoc do? How is she to change the world for better, already disempowered as she is? One thing is for sure. The fundamental change for better won't come by means of some grandiose global changes of the heart. Since the mentorship quality is determined by the daily decisions of millions of academic appointees in this world, a chance that all of these minds would be turned inside out overnight is equal to null. Rather, the change would be gradual and slow, and it would undoubtedly involve incentives coming from none other but many, many individual postdocs and other critical mentees in the academic realm. Approaches that are to be taken are limitless and would spontaneously arise from the clouds of imagination surrounding hearts that have sincerely embraced the qualities of great teachers numbered in the preceding passage.

Although the intensity with which the majority of modern scientific mindsets repulse anything carrying the epithet of religious is striking these days, I believe that innumerable religious stories carry profound metaphors on how life should be changed for better. Even if not taken as a collection of literal reflections of supernatural phenomena, the story of the Christ's life shows an example of how being an outlaw and a complete reject, rather than a king, is a good enough starting point to conceive of changing the face of the world. Countless pieces of art around us likewise reverberate with the similarly heroic messages. As a matter of fact, when you knock on your PI's door determined to be a benevolent mentor rather than a passive mentee, think how the best incentives for change have always come from the small hearts of the Universe knocking on far greater doors, bravely and determinedly.

At the end of the day, the dialectical nature of life secretly tells us that the more flawed and malevolent the mentors or any other powers looming over us in life, the greater the occasion to lucidly stand out and act for the benefit of all. Or as mentioned in a recent manual on how to cope with bullying behavior, "In responding to a bully, the underlying good character of those involved in resolving the problem has an opportunity to shine" (Daniel 2009). After all, thinking of how the Age of Enlightenment arose by confronting the dogmatic views of the Church during the Dark Ages and how Byzantine painters invited to paint the wall of a tsar's palace opposite to the one decorated by the Greek ones, coming up with a brilliant piece of art owing to facing their diametrical stylistic opposites, we should be sure that similar sunrises of new ages of reason, fair professionalism and blissful ethics await us beyond the horizon every time we come across spoiled, selfish and gate-guarding behavior in this delicate academic jungle where big fish eats little fish and where many of us walk like Mowgli (Kipling 1894), shrouded with cosmic starriness, innocence and wonder. These visionary beliefs could be powerful drives in spinning the wheels of our creativity in the direction of our being a messenger of these more enlightening times to follow.

There is no doubt that by resolutely crumbling the corrupted gates of ego and "hearts trained in greed" (II Peter 2:14) in this academic jungle we will be labeled as a serious troublemaker. Experiencing this to certain extent is, in fact, a good sign, knowing that all the progressive ideas that tumbled the existing, outdated paradigms initially faced resistance and neglect, before being widely accepted in the social and scientific circles. Furthermore, common sense reasoning can indicate that going against the stream of customary and clichéd is how we contribute to the rise of novelties and evolution of our knowledge. "Your idea is not bad, but it's just not crazy enough", Albert Einstein is known to have said to a student once, equalizing rebellious and nonconformist craziness with the utmost outbursts of creativity and reminding us that free exhibitions of abnormality, certainly common to both productive thinkers and lunatics, lie at the heart of a true scientific mastermind and provide a key as to what differs a genius from a mediocre intellectual. And since creatively practiced science is all about rebelliously turning things on their heads, by nurturing the attitude of bravely

standing against injustices in this world we can be said to simultaneously exercise the core powers of scientific judgment as well. To be labeled as mad and abnormal by the conventional current of thought that typifies the given era is thus an inevitable fate of the most progressive thinkers on this planet. Still, the nature of social upbringing of human beings is such that it naturally provokes intentions to reject the sense of free will and self-responsibility and substitute it with the blind and unquestioning obedience of authority, as neatly depicted by Fyodor Dostoyevsky in his marvelous story about the Grand Inquisitor (Dostoyevsky 1880). "I too prized the freedom with which Thou hast blessed men, and I too was striving to stand among Thy elect, among the strong and powerful... but I awakened and would not serve madness", says the Grand Inquisitor who betrayed the original, inherently rebellious teaching of the Christ in favor of that emphasizing conformism, materialism and lameness of one's spirit. However, as I claim, all thoughts and acts deserve the epithet of "creative" only when they break the norms of expectancy and normality. To be accused for being a disrespectful renegade is thus a necessary cost of all our progressive deeds. Walking along this road every now and we will face the dark voices of those who have assumed the stance of the Grand Inquisitor. "Look, I know who You are, troublemaker. It took us one thousand and five hundred years to straighten out the troubles you have sown. You know very well that people can't make decisions by themselves. You know very well people can't be free. We have to make their decisions. We tell them who they are to be. You know that very well. Therefore, I shall burn You at the stakes tomorrow" – this is how Heinz von Foerster paraphrased the message of the Grand Inquisitor in the final notes of his classic work on the future of education from a constructivist point of view (Foerster 1972). "The stranger stands up, embraces the Great Inquisitor and kisses him. The Great Inquisitor walks out, but, as he leaves the cell, he does not close the door, and the stranger disappears in the darkness of the night". Subtly and silently, after carefully listening to the monologue of the Grand Inquisitor, our mysterious stranger merely stood up and kissed his lips as a response, demonstrating the merits of simple acts of love that in their value stand far beyond any teaching that insists on mere words.

Unfortunately, the breed of similarly authoritarian, although imaginatively dead people, with no passion in their eyes, words and moves, resembling dehumanized robots of a modern age more than lively and enchanting human spirits, seems to be multiplied with every new day in the realm of conventional science. In the background of such socially awkward acting that tends to conform oneself to the authorities of the world first and foremost rather than live in full blast of the desire to save the world, one could recognize malign obsessions with one's self that have spread like a mental plague across the landscape of the modern society. Boosting one's ego and reputation can thus be said to possess a higher place on the list of priorities of scientists than "living it for the world" more than at any previous point in the history. The tendency for established academicians to guard the gate, so to say, and maintain their honorary statuses, prestigious positions and exorbitant salaries by acting in self-centered, defensive and territorial manners can, however, be seen as

plainly indicative of their going against the stream of truly ethical acting. Faced with an epitome of a Grand Inquisitor, indifferent, coldly logical, dry and self-absorbed, Lewis Thomas, the former Dean of Yale and New York University Medical Schools, concludes the following: "If I were sixteen or seventeen years old and had to listen to that, or read things like that, I would want to give up listening and reading. I would begin thinking up new kinds of sounds, different from any music heard before, and I would be twisting and turning to rid myself of human language" (Thomas 1983). To deliver messages that would disgrace the old languages and styles thoroughly tainted with hypocrisies and wave the flags of love and honesty in new and inspiring ways is the utmost challenge for the postdoctoral newcomers in the academic realm.

### Summary

As in every good ending we are flown straight to the starting thought, the quote from the opening of this paper. Now, however, after this brief train of thought has been exposed, we no longer need to see the state of affairs depicted in it as depressing and hopeless. Instead, it could be recognized as a good standpoint for acting creatively. As a matter of fact, today we witness a huge movement in the direction of establishing an ever more elaborate network of support of postdocs at the North American universities, starting from the formation of hundreds of postdoctoral associations and administrative offices to a plethora of initiatives taken by the National Postdoctoral Association and the NIH to the recent unionization of more than 6000 postdocs at the University of California. However, without tackling the mentorship issues which lie at the core of a thriving postdoctoral experience, these changes for better will merely graze the surface of improving this type of academic appointments. However, just like great revolutions routinely fail to change the world, something that requires a painstakingly slow progress at the scale of individual consciousnesses, so cannot we hope that these political incentives will change the current state of affairs in the postdoc universe for good. This line of thought goes in parallel with another, implicit one, more subtly drawn throughout these pages. It evokes the essence of many ethical teachings that pervade the enormous body of human knowledge by telling us that we need not to exert power in order to change the world for better. "Absolute power corrupts absolutely", Lord Acton would remind us and sometimes the best position we could occupy is that of the sea which is below everything else and, yet, which all the rivers flow into. Despite their underprivileged statuses, the postdocs thus indeed stand at the central podiums of science, from which they are able to change many things that surround and vitally affect the very process of scientific discovery to which they contribute, from the prosaic manner in which science is presented in journals and conferences today to underrepresented and underappreciated statuses of many of the workers in the academic realm to the uncreative narrowness of the typically overspecialized scientific

mindsets to the semi-corruptive biases regularly applied during data selection and experimental design to favor paradigm-building over brave and revolutionary paradigm-crushing approaches to the lack of recognition of philosophical and moral grounds of scientific research to the problematically low quality of mentorship, as discussed here, to innumerable other burning issues at stake. The postdoc I thus see today as able to avoid the sting of the Grand Inquisitor's spirit that drifts along the academic hallways just like Goethe's Faust roamed across the mental labyrinths impossible to navigate by means of pure reason, without following the starlight of beauty and love. She stands out there, firmly holding a lantern that can light up the way for the perplexed travelers on the dark highways of science.

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