

Family & Career

1 in Science **2**

Single Authors – an Exterminated Race 67 km
Increasing Numbers by Increasing Credit?
Natascha Gaster, Jorge S. Burns, Michael Gaster

Where to Publish Our Next Paper? 140 km
Letter to a Group Member
Raphaël Lévy

Being a Parent in Academia 196 km
Interview with Prof. Dr. Till Opatz

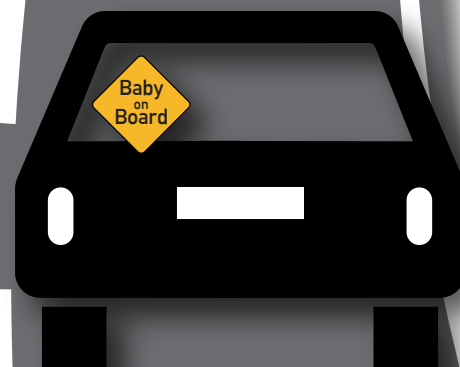


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Views on Life, the Universe, and Everything

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Preface

Editorial Note

Dear Reader,

In this first issue of the 5th volume of JUnQ, we chose *Family & Career in Science* as a topic because we wondered, if it is possible to undertake a successful career in science on the one hand while having a family on the other. Especially as a young researcher who still needs to make a name for himself in science, there is a lot of pressure from the academic society and one would think (at least I do) that these young researchers do not have any time to have a family. But in fact, this is not what reality looks like. Most professors I know or that I have visited lectures from during my studies – male or female – all have a family and children. One of the supervisors of my doctoral thesis is a young researcher himself who has a wife and a little son and his wife is also working a very ambitious job with a tight schedule.

So the question is not really *if* but *how* this is feasible in particular as a woman but also as a man. I say this because at least in the natural sciences, most professors are still male. This might in parts be due to the fact that many women feel they have to choose between family and career and that it seems not possible to combine both in a successful way. Moreover, it is not a rarity that university professors – male or female – live apart from their families during the week because their partner has to work in a different city and is often also engaged in an academic career him- or herself. This addressed spatial distance can easily reach from Mainz to Hamburg as in the case of Prof. Till Opatz who is a professor for Organic Chemistry at the Johannes Gutenberg-University Mainz (JGU). We interviewed him and asked him a lot of questions concerning this and other aspects of his long-distance relationship to his family during the week (page IV). Prof. Katharina Landfester – a director of the Max-Planck-Institute for Polymer Research in Mainz – told us in a very detailed and also very private way about how she and her husband succeed to combine both worlds without having the additional spatial separation but both being engaged in academia (page VI).

But even if husband and wife work within a close distance, the question of everyday childcare remains. In order to get an insight into the current situation at JGU Mainz, we spoke to Stefanie Schmidberger from the Family Service Center and received a tonne of information not only about childcare facilities themselves but more importantly also

about other aspects that are vital for an all-encompassing childcare for working parents (page II).

In our *Views on Life the Universe and Everything* section, we come from single parents to single authors – Natascha and Michael Gaster together with Jorge S. Burns wrote about the fact that there are less and less publications exclusively written by one author (page 1). They investigate what is causing this development and reflect about whether or not single-author papers should be evaluated by different metrics than multi-author papers. Raphaël Lévy from the University of Liverpool gives suggestions in letter form to a fictive group member about where to publish the next paper, thereby making it clear that today's publishing system might need some further maintenance (page 3).

Last but not least, I would like to mention that several editorial board members took part in a short video called “Lazy Muscles”, which was produced by David Peter and with which he participated in the web video contest “Super Fast” in the frame of of the web video contest *Fast Forward Science* initialized by the initiative *Wissenschaft im Dialog*. The task was to produce a short video in 48 h after proclamation of the topic “FAIL in science”. The idea for the video came from a recently published article in JUnQ by Prof. R. Zentel from JGU Mainz called “Smectic LC-Elastomers with NO Shape Change at the Phase Transition”. We didn't expect anything from the contest but in the end, we actually won the first prize! We would like to thank David Peter again for the initiation of the whole thing and if you are interested in seeing dancing mesogens and azo dyes, you are most welcome to have a look at the video itself!¹



—Kristina Klinker

¹https://www.youtube.com/watch?v=h_U6Ixcjpwk

Childcare at the University of Mainz – Talk with Stefanie Schmidberger

Since 2011, the Family Service Center at the University of Mainz is the central institution for parents and university members taking care of relatives. It is dedicated to the support of students and university employees through the collection and improvement of services aimed specifically at parents. Stefanie Schmidberger¹ is project manager at Family Service Center Mainz. She studied the History of Art, Book Studies, and German Language in Mainz. Furthermore, she is trained in career and educational guidance.



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Childcare is one of the most important topics when it comes to compatibility of family and career. Stefanie Schmidberger from the Family Service Center (FSC) at the Johannes Gutenberg-University Mainz (JGU) gave us some insights into the possibilities, students and young scientists have at the JGU. The center combines all family-related services and implements and develops related measures.

There are four facilities for childcare (day care centers, DCCs) located on campus, offering approx. 260 places for children aged 8 weeks up to school age. The Family Service Center couldn't provide us with exact figures because the situation is quite complex due to e.g. a current caretaker shortage, availability of places and students/employees from the Max-Planck-Institutes and the University of Applied Sciences, which are also allowed to place children in the university's day care centers. Nevertheless, Mrs. Schmidberger told us that there are always around 100 children on the waiting list, so places are far from being sufficient. In addition, a fifth DCC is located on an external campus (Germersheim) and will not be topic of this article.

Only employees and students have the privilege to send their children into DCCs on campus. Thus, at least one parent must fulfill one of these criteria, as we learned from Mrs. Schmidberger. She tells us that people in charge of allocation of places try their best to be mindful of a certain balance between students and employees. Therefore, in two out of the four DCCs both students and employees are treated equally. The other two DCCs are exclusively reserved for students' children.

In the allocation-process, urgency plays an especially important role, regardless whether it concerns students or employees. But of course there are more factors that can influence the allocation: Where does the family live? How old is the child? Is the parent raising the child as a single parent?

Are there any siblings (in a DCC on campus)? Are both parents students or employees? Since childcare places are allocated twice a year (winter and early summer), it is also quite important when the application comes in. Once a child is accepted in a DCC, it is allowed to stay there until kindergarten age or until the criteria student and/or employee are not fulfilled any longer. Usually, siblings are taken in with priority and single parents receive preferential treatment as well. Due to these various and individually different factors, there is no rule of thumb of how long students and employees have to wait for a childcare place Mrs. Schmidberger says.

Places in DCCs on campus are full time places (8 hours as a general rule) but exceptions to these time frames are also common, especially when very young children are concerned (< 1 year). In these cases, the time of supervision per day can be adjusted individually. Regular opening hours of DCCs differ and reach from 6:45 am – 5 pm (more than 10 hours; longest) to 7:30 am – 1 pm (less than 6 hours; shortest, only once a month). According to Mrs. Schmidberger, problems are likely to occur at this point, especially for students who often have classes or seminars until after 6 pm. We also wanted to know, what happened if a parent needed to go to an urgent meeting on short notice or if an exam takes longer than the opening hours of the DCC in question or in case of semester breaks. In these cases, three other important service institutions are available to parents, i.e., emergency care, intermediary care, and holiday care.

Intermediary care is available, for example, when the semester starts in October but childcare is required starting from August. It also acts as an important part if no full time supervision is wanted. In that case, children can be placed into intermediary care instead of the regular DCCs. During semester break (2 – 3 months) there is holiday care offered by FSC, because there is no other supervision of

school children available on campus during the non-lecture period. This includes one week around Easter, three weeks during school's summer holidays (which are 6 weeks) and another two weeks during school's autumn holidays (which are 2 weeks).

Emergency care becomes important during closure times of the DCCs. These are two weeks around Christmas and three additional weeks during the summer. It is possible to place children in emergency care for three days a week for a daily amount of 15 € (students) and 25 € (employee), respectively. During the summer holidays in Rhineland-Palatine this can be expanded to five days a week for a maximum period of one month. Emergency care admits children aged few months up to twelve years and time of care per day can be adjusted as agreed upon DCC and parents. Regarding settled time frames for emergency care parents commit themselves to one month. Emergency care is nearly always available, even on weekends and on specific public holidays.

In addition to after school supervision of school children and day care centers for babies and small children the FSC is doing a great deal of things to make the campus a more child friendly place. In different institutes located on campus, there are numerous baby changing rooms, nursing rooms, parent-children rooms, and playground sites.

The FSC also offers a variety of other consulting services:

- Advice for students/employees with children con-

cerning finances

- Advice for students/employees with children concerning legal interests
- Advice for management staff concerning family friendly staffing policy
- Advice for students/employees with relatives in need of care

If required, parents are encouraged to make an appointment in order to get advice tailored to their personal needs.

Finally, we were interested in Mrs. Schmidberger's view on how easy it is to combine family and career nowadays in Germany and in particular at the JGU Mainz. She replied to us that it is a really difficult question for her to answer. She thinks that a lot has been already accomplished and the situation has improved greatly over the years but that, a lot still remains to be done. We agree with Mrs. Schmidberger. Of course it is challenging to accommodate career and family and since we do not have children ourselves we are positively surprised by how manifold the FSC's offer is. But it is still a long way until it is a mere child's play to reconcile family and career in Germany. We thank Stefanie Schmidberger very much for the interesting insights.

—Katharina Stockhofe, Kristina Klinker

Being a Parent in Academia – Interview with Till Opatz

Till Opatz¹ is full professor of organic chemistry at the University of Mainz. He took up his position in Mainz in 2010 after working as a professor in Hamburg, where his wife holds a position as professor for developmental neurophysiology. They have a 17 months old daughter and we were wondering how the family life with two parents in such demanding positions can be managed. In between his busy schedule as a professor and father, Prof. Opatz took the time to answer some questions about the difficulties that parents in academia have to face.

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JUnQ: Dear Prof. Opatz, you are a professor of organic chemistry at the University of Mainz. You also recently became father for the first time. Congratulations on that. But keeping in mind how time consuming and demanding your profession is, were you able to take some time off right after the birth of you daughter?

Opatz: I took some four weeks of vacation and helped my wife in Hamburg until my mother and later my mother-in-law took over. Laura, our daughter, was born very close to the end of the summer term so that I missed only one week of lectures and seminars.

JUnQ: Were you able to leave completely or were you forced to remain working for at least some time a day; maybe remotely?

Opatz: One of the advantages of my job is the freedom to do most of the work whenever I can – unfortunately, this is currently changing. In the weeks after Laura's birth, I worked several hours per day on the computer. Bills were forwarded to me via mail and I returned them on the same way after signing. I also had Skype and telephone conferences. Thanks to my secretary and the strong support of my group, that time was productive in terms of work.

JUnQ: In Germany, parents are able to take up to 14 months of parental leave. Did you use this to full capacity? If yes, how did you split this time with your wife?

Opatz: None of us took a parental leave. Fortunately, we got a strong support from our parents so this was not necessary.

JUnQ: Did you postpone the birth of your first child because of your careers? Is there in your opinion a “perfect” time for academic persons to become parents?

Opatz: There are things in life you can't plan. Any time after our marriage would have been fine, the relatively late

parenthood had the advantage that our careers were less at risk but on the other hand you quickly notice that physical fitness decreases with increasing age.

JUnQ: Your wife is also a professor. Since you both are leaders of research groups you need to stay updated about the current research in your field. Leaving work behind is somewhat hard due to that. Furthermore, as you already mentioned, you live in Mainz, your wife lives in Hamburg – roughly a five to six hour distance by car. How does your work allow you to take care of your child, when you are figuratively “single parents” in stressful jobs?

Opatz: Running a research group may be compared to running a small enterprise. Things don't break if you are absent for a shorter period but problems accumulate if you don't solve them on time. No one else will be doing that for you. The longer the break is, the more difficult it is to keep everything in place. The spatial distance you mentioned is another problem. When Laura is in Hamburg, I take off the Fridays and I use the train whenever possible to have the opportunity to work during that time as well. When Laura is staying with me and my mother, my wife does the same the other way around.

JUnQ: Are day-care centers (*Ger:* Kitas) a solution? Are the opening hours appropriate for your working schedule?

Opatz: We had a Kita-option for Laura in Hamburg when she was three months old, but that turned out to be way too early and we quickly had to find a different solution. Again, our families were very supportive, although my mother is still in full-time employment at the age of 71 and my parents-in-law live in Romania. We soon will have a second try in a private day-care center in Oberursel where Laura, now 17 months old, may be staying for up to 8 hours a day starting from 7:30 am. I normally leave shortly after 7 am and I don't come home before 8 pm but that of course needs to change now. Luckily, the day-care center opens early. My mother will pick up Laura at 3:30 pm and I will

join them around 6 pm. Before Laura was born, my working week included lectures and seminars on four out of five days going beyond 6 pm, partly beyond 10 pm. I have reduced that to a single evening per week now (Thursday, the day of the institute's colloquium) on which my wife arrives to be looking after Laura until Sunday.

JUnQ: That sounds rather stressful. Are you still able to fulfill your workload? Or let me ask differently, aren't you forced to your limits regularly?

Opatz: Of course, I can't put in the same hours I did before. The ever increasing amount of administrative work and the plummeting approval rates for funding ask for even more effort, the same holds true for the modern peer pressure to do networking and self-marketing instead of science. The only solution I have is to be more selective.

JUnQ: How flexible are the day-care centers, if you have important appointments?

Opatz: Not at all. If you want flexibility, you have to pay a fortune for a nanny or the like. My wife and I have planned almost the entire year 2015 by now as we both have to attend international conferences. Fortunately, my wife is not a chemist but a neuroscientist, so the schedules are different.

JUnQ: Nowadays, modern technology makes many things easier. For example video chats – you mentioned Skype earlier – allow us to get in contact with loved ones, when we cannot be close to each other. Are you using this technology to see your child and talk to her every day? Or does your wife do so, when your daughter is with you?

Opatz: I prefer to use the phone – Laura is not happy if she can see the other parent on the screen but he or she is no longer around five minutes later.

JUnQ: Not neglecting the difficulty for "regular" parents/employees to raise a child, but you are somewhat self-employed – or running a small business, as you yourself put it. Do you think the academic personnel (or other self-employed persons) is supported enough by the German state in respect of family politics?

Opatz: The most important support would be to establish enough day-care options with qualified personnel in the

places where they are needed. The fiddling with statistics doesn't solve any problems in the real world. Another question that urgently needs to be addressed by politics is the low birth-rate among academics which should not be dismissed as a consequence of hedonism.

JUnQ: You stated before that not everything can be planned in life, but that the late birth of your daughter had its advantages – your careers are not in danger anymore. Hypothetically speaking, how would you have dealt with parenthood, say five to ten years ago? Are relatives the only solution?

Opatz: As I mentioned, this would have been more problematic and our careers would probably have taken different turns in that case. However, there is no clear-cut shore you have to reach, no point in your professional life from which on you will maintain your status under all circumstances. Relatives are certainly not the only solution but the best one I can imagine.

JUnQ: What should be changed politically?

Opatz: Besides the issue mentioned above, a good start would be to create dual career programs that not only exist in glossy brochures. Other countries are far ahead of Germany in this respect. Moreover, cutting down support staff does save money but it also leaves more work to be done by the people remaining.

JUnQ: Could you give an example which other countries are dealing better with this situation and what they do better?

Opatz: The US-American system offers a higher flexibility in this respect, the same holds true for Canada. Lower hurdles in hiring faculty and a higher appreciation of the needs of dual career couples as well as working mothers in general could be the reason. Scandinavia also has a particularly high percentage of dual career couples, as does Italy. I recently learned that South Africa appears to be very supportive as well in the academic sector.

JUnQ: We wish you the best of luck in the future and thank you for this interview.

—Andreas Neidlinger

Combining Family and Work – Just Do It

Katharina Landfester¹

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Prof. Dr. Katharina Landfester is a director at the Max Planck Institute for Polymer Research in Mainz. Together with her husband Dr. Volker Mailänder, she has two children. In a very personal essay, Prof. Landfester describes her experience as a woman and mother in the scientific world and how they managed to balance their scientific careers and family life showing us why instead of hesitating, sometimes it is best to just do it.



Again and again, there are a lot of complaints in Germany, that there are too few female academics either with or without children. In higher positions in research and business, women (with or without children) are only found very sparsely. Well, in my opinion, there are simply too few role models towards which we can orient positively as a woman, and the “society” is still not very encouraging. This means that women have to swim at an early stage already as a girl and later as a woman against the current, stand by their decisions and must have the courage to follow unusual pathways. It is clear that there is not THE solution, there can only be examples and everybody has to find their way. Therefore, I would like to share my way.

I have chosen Latin and German as my major disciplines in high school. The choice for me was difficult because I simultaneously was also very much interested in science, but my favorite combination of chemistry and Latin was not possible. So I opted for the pure humanities combination, also in view of a possible study of Latin and history. At that time, many people said to me that it is a good idea to become a high school teacher, which would allow for an ideal combination of work and family. I thought that was plausible, until one day before the last written exam in school, the “Abitur”. On this day, I thought: “No way, you cannot do something, just because everyone says that this is a great job for women.” Therefore, on that day I decided that I would study chemistry – perhaps it was a bit defiant (“and now I can prove to you that I can act differently as a woman ...”), but I knew it was the right decision for me. I decided to go to the Technical University of Darmstadt, because I thought that the more technical it is the better it would be. At that time this meant being really among men, the university in Darmstadt probably belonged to the few, where dance classes for women were free because there was a lack of women! During my studies I never had a disadvantage because I was a woman. However, I was shocked by some comments from men. For example, on the very first day of the study, one professor said: “Look around, the women are only here to get married.” Therefore, I simply had to learn how to ignore these and other comments from professors, assistants, students, relatives, friends and neighbors. I also

had to learn not to be scared. And I had to learn “to selectively listen” in order not to doubt whether women really can obtain a science degree and then can also make their career path. I always received very special support from my parents, who have supported me at any time and have always encouraged me, even if it was difficult.

For my master thesis I went to Strasbourg, where I stayed for nine months and wrote my thesis entitled “Synthesis of Core-Shell Latexes”. It was a wonderful experience, especially because the French women were much more open for working women. Here I first saw that it was possible for a woman to be successful, even while having a family.

Then I changed to Mainz to perform my doctoral thesis at the Max Planck Institute for Polymer Research in the department of Prof. Spiess. It was entitled “Synthesis and Characterization of Core-Shell Latexes with Electron Microscopy and Solid-State NMR”. I vehemently rejected any well-intentioned support of colleagues with comments like “Oh, I will help you, because you’re a woman”.

After graduation I decided to go to the United States as a postdoc. I spend 15 months at the Lehigh University (Bethlehem, Pennsylvania, United States, not Israel!), and it was clear to me that I wanted to start with my habilitation and go into academic research. In the US I was really fascinated to meet some women as important role models. For me, the most impressive woman was Diane Wittry, the conductor of the Allentown Symphony Orchestra; she deeply impressed me and I thought that I simply have to challenge myself. In Bethlehem I also first came into contact with a future research topic: “mini-emulsions”.

Back in Germany I went to the Max Planck Institute of Colloids and Interfaces in Potsdam in order to pursue my habilitation. Markus Antonietti was my mentor and he challenged me a lot. He has inspired me again and again, to become better and better; I truly owe him a lot. If I had not had Antonietti as a mentor, I would probably never have been where I am today. As a group leader, I initially had three female Ph.D. students (yes, all of them women!). We really were a very good female team! In 2000, I met my husband Volker, a physician at the university clinics on Benjamin Franklin campus in Berlin.

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After my habilitation in the summer of 2002, I applied for a professor position and was, in fact, already in early 2003 appointed as a full professor of Organic Chemistry (Macromolecular Chemistry and Organic Materials) at the University of Ulm. I first went to Stuttgart to the Ministry responsible for my University, where I negotiated my salary. After one hour, I had the heart to ask if they could help me find a job for my husband. My counterpart responded completely unexpected for me and said, “This is the first time I am asked this question. I think that is great!” I was amazed that in Germany nobody dared to ask this question. Encouraged by this statement I also brought up the subject in the negotiations with the President of the University. I even said that I would only sign the contract if my husband could find a job. Luckily, my husband got a position at the University Hospital of Ulm (even without any further help), so that I could sign my contract very soon.

The beginning was not as difficult as I had imagined at first. For the first year I was the only woman in the chemistry department, then another female professor joined so that the percentage of women had doubled. As a chemist I had quite a large group within a short time. The group consisted of 25 graduate students, 4 postdoctoral students, 5 master students, 5 technicians, and 2 secretaries.

In September 2006, our daughter Karolina was born. Of course this has changed our life (and especially my working life) significantly. Given my large group, I felt it was not possible for me to work temporarily part-time. A few weeks I worked from home and only did what was absolutely necessary. I answered emails, made phone calls and wrote reports. As Karolina was 10 days old, I received the first visitor, a Japanese professor, in the university, with whom I had a scientific conversation for one hour. After four weeks I was back regularly to work together with Karolina. From the beginning, I took her with me everywhere: to meetings, conferences, etc. At a launch event for new students, I gave the talk with Karolina together. The students were amazed. However, there was no problem at all. In my office, I installed a bed in which Karolina could sleep. In between, we went out for walks. At the first meeting with the President of the University, Karolina started screaming just after the meeting had started, she was obviously hungry. It was an important meeting, and I had to decide whether I leave now or breastfeed in public. After a moment of thinking, I chose the latter, which I did ever since, allowing me to take care of my child and my work.

Since I already had many industrial collaborations at this time, it was also necessary for me to go to the industrial representatives. When Karolina was 4 months old, I took her, for example, to London, where I was expected at the airport by a chauffeur. However, the driver obviously had not been instructed very well; he rather expected a gentleman in suit than a woman with a baby. He was very surprised when I asked him if it could be that he was waiting for me. Since name (Landfester) and origin (Ulm) were correct, there could not be any doubt. He was totally confused and just said, “I lost my mind”. The jaguar, which we drove, had certainly never seen a child seat (which I of course had

brought with me) in its car life.

Karolina and I were always a great team. For three hours of lectures (per week) of the winter semester at first my husband was able to take time off, for another two hours per week I hired a nanny. If everything failed, Karolina just came with me to the lecture. In the beginning, I took her in the stroller, then she was in a sling. If I was lucky, she slept immediately when I started the lecture, if not, she talked a bit and then fell asleep. But it did not bother anyone at any time. We went to conferences such as in Lisbon. Since I did not organize any support for Karolina, I took her in a sling on stage to give the lecture. When I began to talk, almost everybody took a picture. It was obviously very unusual!

When I was approached by the German Science Foundation if I could examine a Collaborative Research Centre, I said, yes, if they supported me with childcare, which they did.

In September 2007, at the age of one year, Karolina went into the nursery. In the beginning only in the morning, and later from 9 am to maximum 5 pm, before and after it was Karolina time. When I travelled and Karolina was no longer breastfed, my husband took care of Karolina. The weekend was (and still is) sacred family time!

In December 2007, I got a call from the Max Planck Institute for Polymer Research in Mainz for a director's position. Again, I had to negotiate for my family, even though my husband found a job by himself. He has, however – and I have to give him credit for that – given up his permanent position in Ulm in order to follow me to Mainz. In September 2008, we started in Mainz. My group was bigger, the research broader.

In October 2009, our second daughter Isabella was born. Also as the director of a Max Planck Institute it is possible to harmoniously combine children and career. Just nine days after the birth of Isabella, I started to slowly return to work. As her older sister, Isabella went with me to all business appointments. With the second child, everything was more “normal”. In the German Science Foundation I had only to mention briefly that I needed child care for the Collaborative Research Centre evaluation. Already at an early age, Isabella was in many German cities, but also in Granada, Florida and Brazil. All trips were without any problems. Isabella started to go to the nursery, when she was nine months old. And when I went away with her (because she was still breastfed), I said at the daycare center: “Isabella goes again on a business trip”.

Today our children are 5 and 8 years old; in my office they have their own desk with many important items and sometimes they explain their dolls the world of “nanocapsules and nanoparticles”. When I go on business trips, the children stay in Mainz and go to school and kindergarten; my husband then takes care of the children. Only sometimes I take both children with me on trips; journeys by train are always an experience for both and they are looking forward very much to being able to test the toys in other daycare centers and Karolina is very proud to be responsible for her little sister. In this way, I always try to combine children and work. There is time for work and there is time for the kids when we play, laugh, make music, read books, and tin-

ker. During weekdays, from 5 to 8 pm is holy children time. I never work during the weekends. If the kids are asleep in the evening, my husband and I usually start to work again in a very comfortable atmosphere. And what happens when the kids are sick? They cannot go to daycare, of course. If they are not too sick, they come with me to the institute, otherwise I or, especially when I am on a business trip that I cannot easily cancel, my husband remain at home. Karolina and Isabella are very happy girls.

My credo is: The children must be fully integrated into our everyday life and not be separated. So we have found a way to combine career and family. And I am very thankful that my husband is a very responsible father. Certainly: it can

be exhausting, but the children are worth it.

I am aware that this is only one example. It always depends so much on the individual circumstances, so that there are only individual solutions which can be demonstrated. I can encourage any woman for a pathway to higher positions: First, it is more possible than one thinks, and secondly one has to look for unusual ways. Many times I have heard: “Oh, great that you do it like this, I did not think of these possibilities.” However, one must, in fact, also dare to go unusual ways. It is important to make very specific proposals, solutions can be found in many cases, but sometime the road is not an easy one.

Questions of the Week

The Journal of Unsolved Question presents a “Question of the Week” on its homepage every week. Set up and formulated by the members of the editorial board, or guest writers, the main purpose of the “Question of the Week” consists in intriguing the reader by presenting topics of ongoing research. “Questions of the Week” published so far cover a wide variety of scientific fields, but share the feature to be of certain interest to several disciplines. In the following, we present selected “Questions of the Week” from the last six months.

Who Are You, Santa Claus?

by Nicola Reusch

Traditions differ between several countries. This phenomenon becomes obvious especially in seasons like Christmas. Although there are some analogies, the holidays reveal rather distinctive variations. One of the most important “persons” – at least the mostly used figure for advertisements – is Santa Claus, who brings presents to children. In German he actually has two names and two meaningful dates: Saint Nicholas is celebrated on the 6th of December and the “Weihnachtsmann” brings presents on Christmas Eve (24th of December). But there is also a huge difference between these two old men. If one wants to distinguish between them, Saint Nicholas is represented with a bishop’s attire, with miter and crozier, whereas Santa Claus is the one with a white beard and the red robe, who comes with a whole bunch of reindeers. Looking closer into history, one finds that both figures mainly stem from one person: the bishop Saint Nicholas from Myra (probably *230 in Patara, Lykien; †6th December 343). He is known as wonderworker and there are several legends about his life and work. Furthermore, he was the patron of e. g. children and sailors. But if you ask an historian about the real origin of our picture of Saint Nicolas, the answer most likely will be a bit more complicated. In fact a closer look into historical sources shows that there are not many reliable resources about Saint Nicholas as a historical person; even the dates of his birth and death are not that certain. It is more likely that he is rather a composition of different historical figures.^[1,2]

During the Protestant Reformation, Martin Luther wanted to reduce the attention for the 6th of December and Saint Nicholas for the benefit of celebrating the birth of Jesus Christ on Christmas. This evoked that in Germany the “Christkind” brought the presents from then onwards.^[2,3] In England Father Christmas is the responsible figure for Christmas. But at first he was not a gift-giver at all.

The change from the historical bishop figure to the nowadays secularized picture began with the poem “A Visit From St. Nicholas” that was first published anonymously in Troy, New York. Later Clement Clark Moore stated to be the author but there is an authorship controversy and there are some hints that Henry Livingston, Jr. could be author of the poem.^[4] An associated illustration by Thomas Nast in 1881 shows how Santa is described in that poem and reveals that the author (whoever it might be – this will probably also

remain an open question) took up the Dutch Sinterklaas tradition.



Santa Clause¹

However, besides the historical ambiguous origin and evolution of our picture of Santa Claus: Who he really is for us still depends on what we believe. Just as Francis Pharcellus Church describes it in his editorial answer to an eight year old girl in the New York Sun in 1879 with the title “Yes, Virginia, there is a Santa Claus”. A cinematic portrayal is also shown every year in “Miracle on 34th Street” where, eventually, Kris Kringle wins a court procedure.

Read more:

[1] <http://www.arthuriana.co.uk/xmas/pages/origins.htm>

[2] Manfred Becker-Huberti, “Nikolaus von Myra.”, Presseamt des Erzbistums Köln

[3] “Nikolaus von Myra” in Munzinger Online/Brockhaus – Enzyklopädie in 30 Bänden. 21. Auflage. Aktualisiert mit Artikeln aus der Brockhaus-Redaktion, URL: <http://www.munzinger.de/document/12015061802>

[4] <http://www.stnicholascenter.org/pages/origin-of-santa/>

¹“Jonathan G Meath portrays Santa Claus” by Jonathan G Meath. Licensed under CC BY-SA 2.5 via Wikimedia Commons – http://commons.wikimedia.org/wiki/File:Jonathan_G_Meath_portrays_Santa_Claus.jpg

Does Our Astrological Sign Influence Why We Have to Go to the Hospital?

by David Huesmann

Well, as an intelligent and scientific mind you might be inclined to shout out “No, why should it?”. But what if I told you there is statistically significant evidence that this is the case and that this was published in a respectable clinical journal?^[1] Not so sure anymore?

Well, then you have fallen into one of the most effective traps of statistics. Correlation does not imply causation (and indeed that is the point the paper cited above is making). There are many scenarios in which two factors, A and B, might be correlated.

1. A might cause B
2. B might cause A
3. A and B might partially cause each other
4. A and B might be caused by a common third factor C, or A is caused by C which is correlated with B.

Confused yet? Let me give you some examples:

A is correlated to B but B causes A: You can see a lot of people with umbrellas when it's raining. Therefore umbrellas cause rain.

A and B cause each other: Students with test anxiety fail tests more often.

A and B are caused by C: When ice-cream consumption increases, more people drown. Obviously (in this case) heat causes people to buy ice-cream and go swimming. This is for example far less obvious for the correlation of HDL levels (good cholesterol) and a lower chance to get a heart attack. However, increasing HDL levels by medication does not reduce the risk of heart attack.

So what about our astrological signs and illness? Do I, as a scorpion, have to worry about an abscess in the anal and rectal region ($P = 0.0123$)?^[1] I sure hope not! And indeed there is a fifth case in which correlation is purely coincidental.

So if correlation does not imply causation, what does? Statisticians are working on ways to be more certain if two correlating factors are really connected, but we are still missing the tools to reach absolute certainty.

Read more:

[1] P. C. Austin, M. M. Mamdani, D. N. Juurlink, J. E. Hux, *J. Clin. Epidemiol.* **2006**, 59, 964–969.

[2] <http://www.nih.gov/news/health/may2011/nhlbi-26.htm>

[3] <http://www.michaelnielsen.org/ddi/if-correlation-doesnt-imply-causation-then-what-does>

[4] http://en.wikipedia.org/wiki/Correlation_does_not_imply_causation

Can You Build a Computer in a Test Tube?

by Stephan Köhler

First things first: This question is not about digital computers on the nano scale. It is about the field of molecular logic. Molecular Logic describes a subfield of chemistry in which information is processed by the interaction of single molecules with their surroundings. In this picture the transistor in a digital computer is replaced by a macromolecule in solution. Sending an electrical pulse could correspond to adding specific ions that can bind to the molecule in the solution. The change in optical properties of the macromolecule would be the output. Other approaches use lasers to induce a conformational transition in the macromolecule instead. Molecular logic building blocks can, thus, be sensitive to many different forms of input that can be combined. One could for example think about a molecule that can bind more than one ion species. However this versatility has its drawbacks, as the molecules have to be specifically designed to react to a certain input in a well defined way.

The idea of a molecular computer might sound weirder than it is. After all our bodies use molecular logic everyday, e.g. to convert the presence of capsaicin in our food into the sensation of heat in our mouth. For this reason researchers look for inspiration in nature on how to accurately process information using chemistry.^[1] This is why molecular logic is usually mentioned in the context of sensor applications,

such as devices for fast and reliable detection of pollutants in the environment.

Another application that has recently attracted attention is the use of molecular logic for keypads.^[2] The system can be adjusted to accept different chemical keys so that the end user would not have to design the molecular logic gate itself. Due to the working mechanisms of these molecular keypads they are potentially more secure than digital ones. Speculations suggest that some molecular logic units can potentially perform more complex operations than regular transistors at a tenth of the size.^[1] The mechanisms for manipulating the input and reading the output is still very complicated and an obstacle to miniaturization.

The goal of molecular logic in general is thus not to replace traditional computer systems but rather augment them. It could do this on a similar principle as a quantum computer^[3] by tackling problems to which its “hardware” is naturally suited. There are still many hurdles on the way to molecular computers so it remains to be seen what problems they will tackle in the future.

Read more:

[1] Scholes, *Proc. Nat. Acad. Sci.* **2013**, 110, 17167.

[2] Rout *et al.*, *J. Am. Chem. Soc.* **2013**, 135 (41), 15330.

[3] <http://junq.info/?p=2269>

What Are the Resolution Limits of Microscopy?

by Robert Lindner

Microscopy allows for exciting insights into systems and processes that are otherwise invisible to the human eye due to their size. But as always with technology, there are several limitations. One of the most crucial limitation for microscopy is the resolution limit, defining the minimum distance between two objects at which they still can be identified as separate objects and not as one big blob.



Fluorescence Microscope²

For classical microscopy, the resolution limit is described by the Abbe-Limit and can be approximated by $d = \lambda/2$.^[1] This means that, when using visible light with a wavelength of typically 400–700 nm, the resolution limit is around 200 nm.

But what if that is not small enough?

Since scientists are, naturally, never satisfied with the current state of knowledge, a lot of effort has been put into the enhancement of the resolution. One very prominent example was awarded this year's Nobel Prize in Chemistry. By using fluorescent molecules and a special laser it is possible to track single molecules on their way through living cells, allowing for a ten times higher resolution than typical microscopes.^[2]

But what if that is not small enough?

The technique of atomic force microscopy works completely without light, by using a very sharp tip to scan over a surface and sample its topology, much like the needle of a vinyl record player. In recent years the progress has allowed this technique for the imaging of molecular structures, as you would see them in chemistry textbooks, resolving hexagonal rings and carbon-hydrogen bonds.^[3]

But what if that is still not small enough?

Read more:

[1] C. Cremer, *Physik in unserer Zeit* **2011**, 42, 21–29.

[2] S. W. Hell, J. Wichmann, *Optics Letters* **1994**, 19, 780–782.

[3] L. Gross *et al.*, *Science* **2009**, 325, 1110–1114.

Who Laughs More Often, Children or Adults?

by Kristina Klinker

You may have already heard the sentence: “Children laugh much more often than adults do.” This is what actually many people think. From a scientific point of view, this question has not been answered sufficiently. But first, let's go back to the basics: Why do we laugh?

Laughter is a physical reaction to a certain stimulus that can be of physical nature, like tickling,^[1] or of purely emotional nature,^[2] like laughing at a very funny joke. In any case, it is considered to be a very primitive vocalization that even very young babies of several weeks are able to accomplish in their still pretty limited set of facial expressions.

Then again, is it only a question of age, or is it also gender and/or character-dependent? Social interactions seem to play an important role for how much a person is laughing per hour or per day. But how do you really quantify laughter? Isn't that the biggest problem? Rod A. Martin,

professor for Clinical Psychology at the University of Western Ontario, deals scientifically with these sorts of questions and isn't so sure about children laughing much more often than adults being actually true.^[3] His studies and a quick survey of the scientific landscape leads him to think that even the opposite might be true. But then again, is it really that important? Prof. Martin puts it quite nicely when he concludes his article saying: “[...] this is certainly one of those areas in which ‘further research is needed’.”

Read more:

[1] Stearns, Frederic Rudolph (1972). *Laughing: Physiology, Pathology, Psychology, Pathopsychology and Development*. pp. 59–65. ISBN 0398024200.

[2] Shultz, T. R., & Horibe, F. (1974). Development of the appreciation of verbal jokes. *Developmental Psychology*, 10, 13–20.

[3] <http://www.aath.org/do-children-laugh-much-more-often-than-adults-do> (last access on 11.11.2014)

²“Fluorescence microscop”. Licensed under CC BY-SA 3.0 via Wikimedia Commons – http://commons.wikimedia.org/wiki/File:Fluorescence_microscop.jpg

Is Red Wine Good for Your Teeth?

by David Huesmann

Many beneficial properties have been attributed to the (moderate) consumption of red wine. Reduced risk of heart disease, reduced risk of cancer or better mental fitness have all (more or less convincingly) been connected to moderate wine intake.



Tempranillo varietal wine bottle and glass.³

One of the lesser-known claims is that red wine prevents dental caries. As is often the case, these claims come from a series of simplifications and when we look into the real research results, the actual situation is much less clear. The

actual claims rather sound like this: “Red Wine and Oenological Extracts Display Antimicrobial Effects in an Oral Bacteria Biofilm Model”. So in a model, red wine and extracts from red wine can inhibit the formation of bacterial biofilms by anti-microbial activity^[1] or by preventing the bacteria from sticking to the teeth.^[2] Yes, these bacteria also live in our mouth and their metabolism leads for example to acids that can lead to a degradation of our teeth. But: The situation in our mouth is much more complicated than in this model (after all, that’s why models are used).

So, many questions remain: Do other components of wine like sugars or acids counteract its anti-caries activity? And does the wine even stay in our mouth long enough for its beneficial properties to take effect.

So it seems that the best bet for keeping our teeth healthy is still regular brushing.

Read more:

[1] I. Muñoz-González, T. Thurnheer, B. Bartolomé, M. V. Moreno-Arribas, *J. Agric. Food Chem.* **2014**, 62, 4731.

[2] M. Daglia, M. Stauder, A. Papetti, *et al. Food Chemistry* **2009**, 119, 1182.

[3] <http://www.bbc.com/news/health-27371546> (Accessed 03.08.14)

Are We Getting Closer to Skynet?

by Andreas Neidlinger

Everybody knows the basic plot of Terminator, where an intelligent machine or machine network became so intelligent that its creator – mankind – was no longer able to control it and the machines took over power. This network is called Skynet in the movies. It was – according to the plot – supposed to destroy a big portion of mankind in 1997. Fortunately, this did not happen, but how far are we actually apart from something like this scenario happening in the future? Since I am no expert in military technology and even more, I am not included in confidential defense strategies, I cannot give a prediction from that point of view. But I can take a look at the increasing powers of machines. In the beginning of June 2014 a computer called Eugene programmed by Russian scientists was able to pass the Turing Test.^[1] But let me begin with an explanation of this test. It was developed by British mathematician Alan Turing and is supposed to give an idea about the intelligence of computers compared to humans. The setup is as follows: A person is given a computer screen and a keyboard and he is asked to chat with another person/computer. There is no visual or acoustic interaction possible between the dialog partners.



The Terminator as designed by Skynet⁴

³“Tempranillowine” by Mick Stephenson mixpix 20:28, 2 April 2007 (UTC) – Own work. Licensed under CC BY-SA 3.0 via Wikimedia Commons – <http://commons.wikimedia.org/wiki/File:Tempranillowine.jpg>

⁴“Old Artificial Profile Avatar” von Noble0 – Eigenes Werk. Licenced under CC BY-SA 3.0 via Wikimedia Commons – http://commons.wikimedia.org/wiki/File:Old_Artificial_Profile_Avatar.jpg

Every person is asked to convince its conversational partner that he is human and in the same way must find out if he is chatting with a human or a robot. If a computer is able to convince 30% of the humans that it is also human, the test is passed.

To come back to Eugene, how big is this passing of the Turing Test? Well, I think we don't need to worry for now. Eugene was pretending to be a 13 year old Ukrainian boy for whom English is a second language.^[2] Up until now, human interaction and conversations are still far too complex for machines to imitate. But the computers and programmers are getting better and better. And even if we will not end in a Terminator-like apocalypse, we might end up with other problems like increasing cybercrime that is

harder to defeat. Think of spam for example. Nowadays, it is mostly annoying when your spam filter does not sort out those unwanted mass e-mails. But you can do it within seconds since either the subject is revealing that it is spam or the language is enormously flawed. This might change in the future ...

Read more:

[1] http://gizmodo.com/this-is-the-first-computer-in-history-to-have-passed-th-1587780232?utm_campaign=socialflow_gizmodo_facebook&utm_source=gizmodo_facebook&utm_medium=socialflow (last access 16.08.2014).

[2] <http://www.welt.de/debatte/kolumnen/der-onliner/article129391089/Eugene-hat-Turing-Test-nicht-wirklich-bestanden.html> (last access 16.08.2014)

How Much is Christmas?

by Katharina Stockhofe

What have you paid last Christmas?

In Germany the Christmas business represents 18% of retail industry.^[1] In the course of this, the role of online shopping becomes more and more important. The proportion of total sales doubled from 6% (2007) to 12% (2014).^[1] On average, 89% of us buy at least a part of our presents online.^[2] Bookshops generate 24.3% of their year's income in November and December. But besides the presents there are other things that we are paying for. There are for instance decorations and food which increases the "price of Christmas" to approx. 670 € per household.^[2]

35% of all Germans buy their presents already in November and, what is surprising, only 27% just before feasts (the two weeks before the 24th).^[1] The absolute amount of money spent by every German differs quite a lot, depending on the source you look at. The HDE (Handelsverband Deutschland) mentions approx. 445 €; 377 € is the number published on "unternehmer.de". The GfK (Gesellschaft für Konsumforschung) found out that Germans will spend 285 € for Christmas presents and at "statista.com" you can find 219 € as statement. In these statistics different people were asked and the great deviation could be explained by regional or social differences.

Nevertheless, all sources coincide in the following trends (although the absolute numbers may differ). Considering the buying behavior, Germans can be divided into four groups. The biggest one are the so called hybrid customers: 30.9 million Germans buy their gifts both online and in "real" shops. 24.3 mio do not use the internet at all and will

buy all their gifts in "normal" shops. 9.2 mio are "online-only" customers. And the last group consists from people, who will look up everything online but buy it in a "real" shop then.

13% of all Germans do not buy a single present at all, by the way.^[2]

And what are we planning to spend our money on? Vouchers and gifts of money are by far the most popular presents, followed by clothes and books (including e-books). Both toys and consumer electronics are on place 4, leaving the places 5 – 8 for sweets/groceries, jewellery and cosmetics, CDs, and events like theater or concerts. The remaining money is spent for hard- and software, journeys, sports items, furniture, health and others.^[1,3]

Along these lines:

A very Merry Christmas/
And a Happy New Year/
Let's hope it's a good one/
Without any fear^[4]

Read more:

[1] <http://de.statista.com/themen/246/weihnachten/>, last accessed: 14.12.2014

[2] <http://www.unternehmer.de/marketing-vertrieb/160265-weihnachten-shopping-kaufen-deutschen-ein-infografik>

[3] <http://www.boersenblatt.net/840516/>

[4] John Lennon, Yoko Ono: Happy Xmas (War is over), 1971

Do We All See the Same Colors?

by Philipp Heller

Human color vision is based on photoreceptors known as cones which are located in the back of the eye. These receptors process information about the light's wavelength into electrochemical signals. Most people have three different photoreceptors (S-, M- and L-cones), thereby being sensitive for short, medium and long wavelength light. However, around 10% of the population are affected by color blindness with red-green color blindness being the most common type. People exhibiting the latter, lack the respective photoreceptors for medium or long wavelength light and are not able to discriminate between green and red. On the other hand, there are also individuals specified as tetrachromats, who possess a fourth photoreceptor and are therefore more sensitive for certain hues within the normal color spectrum. So when regarding these two extremes – meaning that the physical part of color vision is altered in comparison to the normal case – one can actually say that colors can be perceived differently.



Color Circle.⁵

But what about people with normal trichromatic vision? As they share the same system for color perception which is wired in the same way within the brain, do they still vary in their inner experience of color? In the way their brain creates the image of a certain color? Or asked differently: Is my yellow the same as your yellow? These questions

are part of a broader philosophical concept termed qualia which refers to the subjective experience of a mental state. Because of this subjectivity in our inner perceptions and the limitations of our language to describe the latter (explanatory gap) – ultimately, because of the isolation of our minds, we will never be able to tell exactly if one person perceives a color in the same way as another person does.

Yet, there are some indirect hints that individuals perceive colors differently. For example, matching colors for clothing seems to be easier for some people than for others. Also, persons have different favorite colors and may attribute different moods with a specific color. A study on red-green color-deficient primates by Neitz and coworkers published in *Nature* in 2009 suggests that the way colors are created by the brain is not predetermined but can adjust to new conditions. Like red-green color-blind people, male squirrel monkeys are dichromatic by birth because they lack long wavelength-sensitive photopigments. In a gene therapeutic approach, Neitz and coworkers introduced the human L-opsin gene to the monkeys by using modified viruses. In this way some of the M-cones could be converted into L-cones thereby establishing the necessary molecular machinery for detecting red and green light. Although the monkeys' brains lacked the neuronal circuitry for L-cones they were able to exploit the new signals and to discriminate red and green against a gray background. In other words, the monkeys were able to see new colors. These results imply that there are no predetermined inner images of color ascribed to a certain wavelength. From this, one can interpret that the brain does not create colors in a default mode but that everyone develops his own unique way of perceiving colors. In the end, although we cannot be absolutely sure, we indeed might see colors differently.

Read more:

- [1] <http://www.livescience.com/21275-color-red-blue-scientists.html> (last access on 30.12.2014)
- [2] <http://en.wikipedia.org/wiki/Qualia> (last access on 30.12.2014)
- [3] http://en.wikipedia.org/wiki/Explanatory_gap (last access on 30.12.2014)
- [4] K. Mancuso, *et al.*, *Nature* **2009**, 461 (7265), 784–787.

⁵“Color circle (hue-sat)” by Alexandre Van de Sande. Licenced under CC BY-SA 3.0 via Wikimedia Commons – http://upload.wikimedia.org/wikipedia/commons/5/51/Color_circle_%28hue-sat%29.png

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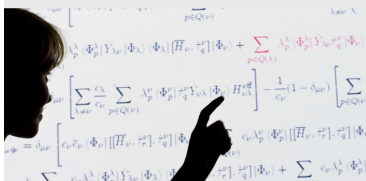
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Views on Life, the Universe, and Everything

Single Authors – an Exterminated Race – Increasing Numbers by Increasing Credit?

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Received 09.07.2014, accepted 05.08.2014, published 02.09.2014

Over the last years the number of manuscripts published by single authors has diminished. This is despite single author articles having qualities unattainable in multi-author-papers. They present an opportunity to publish opinionated and creative thoughts unbound by compromise. Moreover, they represent a unique vision of the research process. This being said they may be undervalued, as they are appraised similarly to the multi-author manuscripts and this might call for a change in evaluation metrics.

Authorship patterns have shifted with a growing current trend for teamwork making the sole-author manuscript a rare species. This is in stark contrast to the historical precedent when between 1600 and the 1920's only solo-authorships were accepted, a practice that came to an end by the 1980's.^[1]

Accordingly, analysis of articles published in four prestigious American journals showed that single author articles were nearly extinct and that the average number of co-authors had increased from 4.5 in 1980 to 6.9 in 2000.^[2] Paradoxically, the possibilities for a single researcher to conduct research and write a manuscript have never been as great as they are now. Latest developments have extended the single analysis to multi-parametric platforms and the potential to outsource molecular methods and “omics” technologies on a fee-for-service basis with vastly improved open-source and web-based data mining resources have facilitated an individual's ability to address scientific questions.

So why do we observe a growth in co-authorship but not in single authorship? It may reflect countering preferences for the publication of ever more comprehensive studies, combining diverse specializations to an extent that it is difficult for an individual author to have the knowledge to complete all aspects of the study themselves; hence a requirement for larger and more diverse teams.^[3,4] Research demands constant innovation, but this may be counterproductive if it comes at the cost of driving specialization to the extent that

we lack individuals appreciating the strengths and weaknesses of a myriad of methods, capable of thinking with broad scope to communicate the overall picture.

Another explanation for the growth in number of authors per article might be the long-standing “Publish or perish” problem, whereby a researcher's career path is principally influenced by publication productivity. This is arguably not a problem but a fair selection pressure to be applied so that science benefits from hard work, however, it can be problematic if it becomes the dominant motivator. Continuous publication of cited manuscripts is needed to maintain a favorable evaluation of the researcher's impact (described by citations) and the number of articles is often a dominant metric used in promotion and funding reviews.^[5] This constant pressure to publish might stimulate the criticized practice of honorary authorships that is vulnerable to the mention of those with a questionable contribution.

Notably, scientific manuscripts in high impact journals have a greater number of authors and though there may be situations where authorship is generously attributed to help widen prestige, it is also true that many articles in high impact journals reflect very extensive projects that have required more authors.^[6–8]

However Kevin Hallock from Boston University School of Medicine stated “The effort and initiative required to publish alone suggests an independent and tenacious scientist – both highly desirable qualities in any researcher”.^[9] Since a single authorship provides evidence of a thorough understanding of the relevant scientific processes, one idea might be to require that all Ph.D. students obtain at least one single-authorship manuscript. In line with this idea, Enrico Fermi used to require his Ph.D. students to submit results for publication in their name alone lest inclusion of a famous author might favor automatic acceptance rather than rigorous review.^[10] Additionally, since senior scientist/last authors are often responsible for the validity of the work, even if they do not necessarily perform

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the experiment themselves, preexisting experience with all parts of the scientific process, e.g. as shown through solo-authorship, could be considered a prerequisite that provides appropriate authority.

Although single authors are not capable of the same amount of work as a large team, they have an important role in allowing insightful opinionated arguments that can stimulate much debate (even risk significant political turmoil),^[11] allowing examples of highly creative and laudable individualistic approaches to fundamental questions to be appropriately attributed.^[12] In line, F. Scott Fitzgerald stated that “no grand idea was ever born in a conference”.^[13] Moreover, should we be concerned that single authorships are diminishing more in the Sciences than in the Humanities?^[14,15]

Today, it might be difficult for one scientist to take charge of every part of the process involved in a study as a result of the need for multidisciplinary. However, for those that do, then our current evaluation system fails to acknowledge the true value of single author work as it tends to reward a coauthor similarly to the single author.^[16] This reduces the encouragement to write solo papers, also because being a part of a group can generate more “returns” as more authors can contribute to (legitimate) self-citation and produce a higher number of publications leading to a higher impact. Therefore, individuals may consider that the potential advantages of being a sole author are few.

An exterminated race or not, single authors are not to be overlooked. Single authors may not only show a unique understanding of scientific work but such individualism also encourages creativity and the chance to be opinionated in a fully responsible manner. The scientific community could benefit from encouraging solo authors. As it is now, the evaluation metrics needs to be reassessed and modified in a

way so that there is an element of reward for the single author. Sole-searchers are invited to help save the threatened single-author species – we need you.

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Where to Publish Our Next Paper? – Letter to a Group Member

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Received 17.10.2014, accepted 21.10.2014, published 23.10.2014

Hi X,

Thank you for sending your draft. Really nice work! I will give you more detailed feedback in the next couple of days, but now I want to answer your question about where we should submit our paper.

In the last couple of years, partly because of my involvement in the stripy controversy (more below), I have thought a lot about publishing ... and concluded (along with many other people) that the system is absurd, worse, toxic. Public funds are paid to commercial publishers to put publicly-funded research behind paywalls. The (unpaid) hard work of reviewers (which may or may not have led to improvements in the article) remains confidential and does not benefit the community. Publicly-funded researchers waste their time reviewing articles which have already been reviewed several times by other researchers for other journals. Researchers are evaluated on the impact factor of the journals in which they publish even though this is not at all a measurement of the quality of an article.^[1,2] There is a serious reproducibility crisis^[3] but no incentive to reproduce or criticize published work. Those flaws and their consequences can be illustrated by briefly looking at two recent controversies.

It took us three years to publish “Stripy Nanoparticles Revisited”.^[4] The numerous (and still unfolding^[5]) events that followed this publication opened a window into our disfunctioning scientific system,^[6] highlighting the failure of journals and institutions to promote correction of the scientific record. The stripy controversy also shows the role that (open) post-publication peer review and social media can play in enabling those discussions which are almost impossible to get through the traditional journals.^[7] A positive example of these new dynamics is the case of Brian Pauw, who came across the controversy via Twitter, made interesting contributions on his blog^[8] and in the online discussion (PubPeer^[9]) of the arXiv pre-print of our follow-up paper, and eventually became an author of the revised version.

Announced as a major discovery with two publications in Nature and massive media coverage, the generation of stem cells through an acid bath (STAP) rapidly turned into a scientific and human disaster, which culminated with the suicide of one author (see tribute^[10]). It is hard to overestimate the impact that this disaster had on Japanese science and on

stem cell science more generally. Yet, severe flaws in these articles had been identified before publication by reviewers at Science^[11] (where the work had been initially submitted) and by reviewers at Nature.^[12] All of this could have been avoided if Nature had decided to reject the article, or, if the work had been published alongside the reviews that cast serious doubts on its validity, leaving it to the readers to make up their mind or wait for replications (which never came in spite of attempts).^[13]

The system is so severely flawed that it threatens scientific progress and the fabric of science. Not all those problems are due to the publishing model, but it certainly plays a key role.

We need to change the ways we share scientific progress and we have the opportunity to do so: innovative publishing platforms can transform the way scientists share, discuss and evaluate their findings. I believe that this is the future and embracing this future will be beneficial to young researcher’s careers but I know that this is a gamble because many colleagues and institutions still evaluate researchers through the impact factor of where they publish. In our own institute at a recent research strategy event, colleagues one after the other argued the excellence of their research groups on the basis of the number of articles published in high impact factor journals. I do not underestimate the gamble and this is one with your own career so it is not one I can make on your behalf. If you are happy to try one of these platforms, I’ll be delighted. If you prefer to go for a more traditional venue, I’ll help you as much as I can and we will pay the fees to make the article open access (all journals offer to make your articles open access though this hybrid model is further filling the pockets of publishers and does not seem to help the transition to full open access; see paragraph entitled “Get value for money” in this post^[14] by Stephen Curry).

The ideal system would be a high quality platform combining these three features: #1 not-for-profit, #2 open access (and reasonably priced), and, #3 with articles published immediately followed by open peer review. There are a lot of experiments in publishing at the moment and I list below just a few which are relevant to our area of research.

All the best,

Raphaël

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Journal/Publication platform	not-for-profit	open access	immediate publication followed by open peer review
ScienceOpen ^[15]		✓	✓
F1000 Research ^[16]		✓	✓
Beilstein Journal of Nanotechnology ^[17]	✓ (and free)	✓	
PloS One ^[18]	✓	✓	
Royal Society Open Science ^[19]	✓	✓	
Chemical Science ^[20]	✓ (and free in 2015/16)	✓	

Read more:

[1] <http://occamstypewriter.org/scurry/2012/08/13/sick-of-impact-factors>

[2] <http://www.theguardian.com/science/political-science/2013/may/17/science-policy>

[3] <http://www.prospectmagazine.co.uk/blogs/philip-ball/the-replication-crisis>

[4] <http://raphazlab.wordpress.com/2012/11/23/stripy-nanoparticles-revisited/>

[5] <http://julianstirling.co.uk/when-it-comes-to-scientific-publishers-i-just-dont-know-who-to-trust-anymore/#comment-15893>

[6] <http://raphazlab.wordpress.com/2013/11/27/the-stripy-controversy-as-a-window-into-the-scientific-process/>

[7] <http://www.timeshighereducation.co.uk/story.asp?sectioncode=26&storycode=422337>

[8] <http://www.lookingatnothing.com/index.php/archives/1361>

[9] <https://pubpeer.com/publications/B02C5ED24DB280ABD0FCC59B872D04>

[10] <http://www.ipsell.com/2014/08/stem-cell-community-tribute-to-yoshiki-sasai/>

[11] <http://retractionwatch.com/2014/09/10/truly-extraordinary-simply-not-credible-suspiciously-sharp-a-stap-stem-cell-peer-review-report-revealed/>

[12] <http://news.sciencemag.org/asiapacific/2014/09/exclusive-nature-reviewers-not-persuaded-initial-stap-stem-cell-papers>

[13] <http://www.ipsell.com/stap-new-data/>

[14] <http://occamstypewriter.org/scurry/2014/04/20/open-access-yes-you-can/>

[15] <https://www.scienceopen.com/home>

[16] <http://f1000research.com>

[17] <http://www.beilstein-journals.org/bjnano/home/home.htm>

[18] <http://www.plosone.org>

[19] <http://rsos.royalsocietypublishing.org/about>

[20] <http://www.rsc.org/publishing/journals/sc/about.asp>

Which Is the More Promiscuous Sex?

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Received 09.10.2014, accepted 03.11.2014, published 11.11.2014

Sexual promiscuity can be studied quantitatively as a behavior. The qualitative study of the emotions and motives associated with promiscuity is secondary. When heterosexual behavior is studied quantitatively, promiscuity is necessarily equal among males and females. In other words, contrary to contemporary popular opinion, the group of human males and the group of human females have the same average number of sex partners.

“[...] through [mathematics] we are able to reach certainty in other sciences and truth by the exclusion of error.”
—Roger Bacon^[1]

In memory of Stanislaw Andreski who chuckled gleefully when first telling me in 1985 about the gullibility of some of his colleagues and the mathematical impossibility of the reported figures.

1 Introduction

Recently, there have been some additions and corrections of the theory of female sexuality. In 2001, Catherine Millet's *The Sexual Life of Catherine M.* raised radical doubts about the current conventional view on female sexual behavior. The same, albeit with refreshing and disarming humor, did Ophira Eisenberg's *Screw Everyone* in 2013. Daniel Bergner's non-fiction exploration *What Do Women Want?* suggests that women experience much more sexual desire than formerly thought. Lars von Trier's films *Nymphomaniac Volume I* and *Nymphomaniac Volume II* question traditional ideas about both female sexual desire and sexual behavior. Even though these popular scientific, autobiographical, and artistic works challenge the *idées reçues* about female sexuality, undaunted scientific inquiry into female sexuality is still – surprisingly – in its infancy and equally still – not so surprisingly – very much surrounded by taboos. And as taboos still play such an important role, it remains difficult to arrive at the truth about many matters. One such matter is the question: Which is the more promiscuous sex?

2 Question

When investigating sexuality, it is prudent to distinguish between sexual desire and sexual behavior. There may be an association between desire and behavior, but “it ain't necessarily so”. For this reason, this View on Life, the Universe, and Everything will focus on sexual behavior. In addition, there are further reasons to concentrate on sexual behavior. The first one is that it is behavior that drives the process of evolution. A second reason is that behavior is indeed easier to study than emotions and motives.^[2] This does not mean that emotions and motives are unimportant. They are

important, at the very least as *post hoc* rationalizations. It simply means that, for the moment, it is more practical to concentrate on behavior, i.e. on the harder facts, which, by the by, will proof hard enough to establish.

Thus the question under scrutiny becomes: Which is – behaviorally – the more promiscuous sex? Immediately we run into trouble. What does ‘promiscuous’ mean? The *Oxford English Dictionary* says:

A. adj. 1.c. spec. Of a person or animal: indiscriminating in sexual relations. Also (of sexual intercourse, relationships, etc.): casual, characterized by frequent changes of sexual partner.^[3]

This is a fine definition and it is surely sufficient for the present investigation.^[4] The key terms are: indiscriminating, casual, and frequent changes. As we will deal with the matter from the aspect of behavior, we will leave aside the motives and emotions. Consequently, the qualitative terms ‘undiscriminating’ and ‘casual’ may be temporarily disregarded. This leaves ‘frequent changes’ or, in short, ‘frequency’ as quantitative factor. In other words, we want to find out whether men or women are more promiscuous by looking at the frequency of changing their sexual partners.^[5] Ultimately, this means that we are interested in the total number of their sexual partners.^[6]

3 Resolution

It seems that in evolutionary psychology and sociobiology there is an understanding of female sexuality which is summarized by the twin pivotal conceits of ‘female choice’ and ‘parental investment’.

Female choice theory, part of Darwinian sexual selection, boils down to the idea that females are the choosy sex who

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discriminate amongst potential male sex partners and then select the fittest to procreate with.^[7]

Parental investment theory says that females have a good reason to be choosy because they invest much more in offspring than males. So, it is predicted that males will try to impregnate as many females as possible whereas females will discriminately choose the partners with the best fitness.^[8] Moreover, males have a good reason to invest less in their offspring because they can never be certain of their paternity, whereas females are always certain about their maternity.^[9]

Consequently, female sexuality is defined by coyness,^[10] chastity,^[11] and discrimination^[12] whereas male sexuality is defined by cockiness, spunk, and indiscrimination. In humans, this would result in a predilection for committed monogamous relationships in females and an inclination for casual sex ('to sow his wild oats' preferably widely) in males. The statistical results of sex surveys proclaiming that men report a considerably higher average number (arithmetic mean) of sex partners than women are taken as proof for this view.

However, in this argument 'female choice' and 'parental investment' theories do, at best, describe reality after an interpretation of the alleged facts. Or rather, and less charitably, they look at reality with blinders *and* through colored glasses. Our concern here should be with the facts. But what are the indubitable facts concerning male and female promiscuity? People have always been fascinated by this question it seems, but only relatively recently, surveys have been conducted in order to try to settle the matter scientifically. Alfred Kinsey and his collaborators asked so many American males (1948) and females (1953) about the number of sexual partners they had had. The number of sex partners that males reported was significantly higher than the number females reported. Since Kinsey *et al.* consecutive surveys showed that in the Western world the discrepancy became smaller, but even in recent investigations, there is still a considerable difference between the total number of sex partners males and females report. This discrepancy is reflected in popular opinion and culture.^[13] With sardonic wit the problem was presented by the Renaissance author Poggio Bracciolini:

Outside the gates of Perugia there used to be the church of St. Mark, and one holiday, when all the people were assembled in church, Cicero, the parish priest, in the course of his Easter sermon, uttered the following words:

"Brethren, I should like you to relieve me of a grave doubt. When, during Lent, I had occasion to hear the confessions of your wives, there was not a single one of them who did not assert she had maintained her fidelity to her husband. You men, on the other hand, almost all confessed to me that you have sinned with the wives of others. Now I should like to ask you, so as to remove this doubt of mine, who and where are these women?"^[14]

A contemporary author put it even more bluntly:

Now if your criteria does involve lover counting make sure you're meticulous because when it comes to number of lovers, a little mathematical incongruity shows we have a tendency to be a bit all over the shop. Men report having bonked on average two to four times as many women as women do men. Since they're bonking each other here, someone's telling fibs.^[15]

What are the quantitative facts? How realistic is it to expect to arrive at the correct figure of the average number of sex partners when probably everyone – women *and* men – is telling fibs?^[16]

An answer may come from 'extrapolation'.^[17] If in surveys males and females give incompatible answers and the magnitude of discrepancy is associated with the 'restrictiveness' of the society in which the females find themselves, then, perhaps in the ideally if not idyllically free society in which the restrictions on sexual behavior are removed, the answers of the females will reflect their 'natural' disposition of promiscuity.^[18] In other words, in this Arcadia women will live to the full *and* report their 'natural' promiscuity without interference of social inhibitions and cultural taboos.^[19]

Another answer may come from 'experimentation'. The well-known television format Big Brother may offer an opportunity to observe *Homo sapiens* in action as if they were just another group of primates.^[20] These males and females, who are under constant but covert surveillance, may behave as naturally as possible. This would result in "the fit and natural arrangement of sexual connection". Under Big Brother conditions, the observed average number of sexual contacts will in all likelihood also be equal for men and women.

Discriminating female coyness and indiscriminating male lustfulness are the psychological motives that are associated with the twin biological concepts of 'female choice' and 'parental investment'.

Biological theory in this matter is highly 'deductive' or presumptive and influenced perhaps by male wishful thinking and female expediency.^[21] Still, the mathematical impossibility of diverging promiscuity averages for males and females must inevitably overrule the presumptive biological deduction. Mathematically the males in a closed group cannot have more sex partners than the females, or put conversely, the females cannot have less sexual partners than the males. To give a fictional illustration; if Don Juan has sex with a different woman every day, then, by definition, a different woman must have sex with Don Juan every day, too.

However interesting sociologically it may be to find out the correct average number of sex partners both sexes do have, this is not the goal of the present inquiry. For now it suffices to know that by mathematical necessity the average number of total sex partners must be equal for men and women.

4 Excursus

In the history of mankind the related question ‘Which is the more lustful sex?’ has been asked continually. The answer to this question varied according to the period in which it was asked. In Ancient Greece, the story of Tiresias^[22] told that women are the more lustful sex, in as much that women experience more pleasure – up to nine or ten times as much^[23] – than men. Also in later eras, for example in the Middle Ages and in the Renaissance, women were regarded at least as lustful as men and, indeed, often as more lustful.^[24] In fact, in most historical periods and in most parts of the world women were regarded the lustier sex. It was only in the nineteenth century that women generally became the coy and chaste sex. The epithets of Biedermeier and Victorian are appropriate. A famous – or notorious – Victorianism is ‘The Angel in the House’. It is common knowledge that an angel is a sexless creature. Evidently, not everybody was taken in by this. For example, the Austrian gynecologist and balneologist Enoch Heinrich Kisch wrote:

According to the general opinion, the sexual impulse is not so strongly developed in women as it is in men. [...] I do not believe this view of the slight intensity of the sexual impulse in women in general is well grounded, and can admit only this much, that in adolescent girls who are inexperienced in sexual matters, the sexual impulse is less perfect than in youths of the same age who have undergone sexual enlightenment. From the moment when the woman also has been fully enlightened as to sexual affairs, and has actually experienced sexual excitement, her impulse towards intimate physical contact and towards copulation is just as powerful as that of man.^[25]

Still, Kisch echoed an idea offered a century earlier by the German idealistic philosopher Johann Gottlieb Fichte:

In short, in the unspoiled woman no sexual desire manifests itself, and there dwells no sexual desire, but only love, [...].^[26]

The crucial word here is the past participle adjective ‘unspoiled’. The nasty implication of this idea is that, if a woman does experience sexual desire, then she must have been spoiled. In that case she was a ‘fallen woman’. This posed a problem but, luckily, there was a guilty party to be found.^[27] But what if a woman was undoubtedly ‘unspoiled’ and still showed signs of sexual desire? In other words: if she showed spontaneous or natural sexual desire – in Fichte’s terminology ‘Naturtrieb’. The German idealists and later the Victorians certainly had an even bigger problem there. And, of course, they had an equally great fascination for the women thus endowed or burdened.^[28] It

is no wonder that this was about the same time nymphomania was first officially diagnosed.

The ideas of certain sociobiologists and evolutionary psychologists pertaining that women are the coolly choosy and coy sex and men the perpetually horny and indiscriminating ones may be understood as a remnant of Victorian times, i.e. as a Victorianism.^[29]

The Victorianism of choosy female coyness and random male randiness is still apparent in another small but significant detail. In Mary McCarthy’s novel *The Group* Harald Petersen says about the part he has in a theater play:

‘I, though not a virgin, am the chaste Hippolytus of the farce, which the play, incidentally, is. A male defending his virtue is always a farcical figure.’^[30]

The interesting and perhaps surprising thing is that a “male defending his virtue” was not always a farcical figure. In the Bible (Genesis 39:7–20), Joseph successfully fends off Potiphar’s wife but nevertheless finds himself in big trouble when the slighted and vengeful woman accuses him of attempted rape instead.^[31]



Figure 1: Rembrandt – *Joseph and Potiphar’s Wife* (1634, Rijksmuseum Amsterdam).²

In Greek mythology, the theme of the virtuous male was quite common. Tyro, a mortal woman, pursued the river god Enipeus, but he did not want to have anything to do with her sexually. Hippolytus, whom Mary McCarthy referred to, even paid with his life for rejecting the advances of Phaedra, his stepmother, the second wife of Theseus. Snubbed, Phaedra deceived Theseus saying that his son, Hippolytus, had raped her. Theseus, furious, used one of the three wishes granted him by Poseidon to curse Hippolytus. Poseidon sent a sea monster – or, alternatively, Dionysus sent a wild bull – to terrorize Hippolytus’s horses, which dragged their rider to his death. Only more recently, in the transient phase into Victorianism, the male defending his virtue becomes comical. In Henry Fielding’s *Joseph Andrews*, the eponymous hero has to flee again and again the

²Licensed under Public Domain via Wikimedia Commons – http://upload.wikimedia.org/wikipedia/commons/8/8c/Rembrandt_-_Joseph_and_Potiphar%27s_wife.jpg

amorous advances of Lady Booby. However, a male defending his virtue against the advances of a fleshly female is only truly a farcical figure since Victorian times, because the scripted roles of males and females had by then become one-dimensional: the males are the perpetually randy and brutally direct inseminators and the females are the coy ‘angels in the house’, patiently waiting to be inseminated by their lawful husbands.^[32] Had Emma Bovary (1856) still something of the wanton adulteress, Anna Karenina (1878) is already more victim than culprit, whereas Tess of the d’Urbervilles (1891) is finally ‘A Pure Woman Faithfully Presented’. Of course, there is something unsatisfactory about this.^[33]

5 Recapitulation and Conclusion

In the Western world today, the view on female sexuality is still fairly dominated by the combined prejudices of late Victorianism and more recent evolutionary psychology that upheld the idea of the coy and choosy female.

It is highly contentious whether this view of female sexuality is correct. It is likely that this view is an expression of combined male wishful thinking and female expediency.^[34] As the original definition of ‘promiscuous’ included the qualifying present participle ‘undiscriminating’, we were not able at first blush to assign equal promiscuity to men and women as women appear to choose more discriminatingly than men.^[35] So, even if females and males do behave identically quantitatively, qualitatively there may very well be a difference between female and male promiscuity.^[36] A solution out of this quandary was to change the definition of ‘promiscuity’ by deleting ‘undiscriminating’ and ‘casual’ from the list of its defining characteristics. This is precisely what some authors have done lately. For example, Tim Birkhead writes in his monography *Promiscuity*:

The myth of the reluctant female had started to crumble. [...] Females may trade sex for resources: money, food, a house, parental care or fertility. Alternatively, or in addition, females may engage in extra-pair copulations in order to improve the genetic quality of their offspring.^[37]

Even if, according to Birkhead, females may be not as reluctant and coy as formerly thought, they still seem to be rationally trading sex for resources or to be rationally improving the genetic fitness of their offspring. Why may females not be perceived as irrational, i.e. as irrational as males in sexual matters? Moreover, some assumptions may betray an unjustified historical bias:

The very recent recognition that females of most species are promiscuous and routinely copulate with several different males, together with the realization that in an evolutionary sense all organisms are basically selfish, has revolutionized our view of reproduction.^[38]

Perhaps Catullus and Ovid, Chaucer and Bracciolini, Brantôme and Casanova recognized that human females are ‘naturally’ promiscuous somewhat earlier than the belatedly converted Victorian evolutionary psychologists.

As the question has been answered as far as behavior is concerned, we may now proceed to the study of emotions and motives associated with promiscuity.^[39]

In fact, if women are as promiscuous and at least as lustful as men then there may as well be something like the Coolidge Effect in women. But that is another story for another time.

References

- [1] Roger Bacon, *Opus Majus*, Part 4, Chapter 3. (Translated by Robert Belle Burke), Philadelphia: University of Pennsylvania Press, 1928 [c.1267], Vol. 1, p. 124.
- [2] “It’s usually unwise to concentrate too early or too strongly on motive.” and “Motive is the last thing to look for. You can always find a motive.” wrote P. D. James. One should always bear in mind that sex can be ‘done’ and ‘had’ for various reasons and there are many motives for sexual behavior; everything between coercion, convenience, custom, inclination, and addiction. To make things more complicated still, motives are rarely pure and never simple. One could safely say that sex is being ‘done’ and ‘had’ upon mingled motives. “Ik doe wat ik doe / En vraag niet waarom / Ik doe wat ik doe / En misschien is dat dom” (“I do what I do / And don’t ask me why / I do what I do / And perhaps that ain’t sly”) wrote Lennaert Nijgh and sang Astrid Nijgh in 1973.
- [3] <http://www.oed.com/view/Entry/152429?redirectedFrom=promiscuous#eid>.
- [4] The other troublesome word is ‘sexual’ and thus ‘sex’. We take ‘sex’ to mean “sexual intercourse; the act of sexual intercourse” in the conservative Clintonian sense. However, in the title of this View on Life, the Universe, and Everything ‘sex’ refers to “either of the main divisions into which many organisms can be placed according to their reproductive functions or organs.”
- [5] We are discussing heterosexual men and heterosexual women having heterosexual intercourse. A different question altogether is whether homosexual men are more or less promiscuous than homosexual women.
- [6] The question which sex is more adulterous is a related but not identical question. Adultery is understood here as sexual intercourse outside a monogamous partnership.
- [7] Ophra Eisenberg, *Screw Everyone – Sleeping My Way to Monogamy*. Berkeley: Seal Press, 2013, p. 8 (Introduction):
They weren’t just random guys. I *picked* them.
- [8] For an enlightening and entertaining piece of ‘journalism’ : <http://www.telegraph.co.uk/men/the-filter/virals/11013718/What-happened-when-this-man-asked-200-women-to-sleep-with-him.html>.
- [9] *Mater semper certa est, sed pater semper incertus*. This was before the days of gestational surrogacy and genetic fingerprinting. Of course, results of paternity tests can be manipulated (‘Next’, *Desperate Housewives*, Season 2, Episode 1, 2005).
- [10] Andrew Marvell, ‘To His Coy Mistress’ (c.1652).
- [11] William Shakespeare, *Cymbeline* (1611), Act II, scene 5, line 14:

As chaste as unsunn'd snow.

[12] George Eliot, *The Mill on the Floss*. Harmondsworth: Penguin Books, 1994 [1860], p. 489:

‘Good God!’ he burst out at last. ‘What a miserable thing a woman’s love is to a man’s! I could commit crimes for you, and you can balance and choose in that way.’

[13] Harald Martenstein, *Gefühlte Nähe – Roman in 23 Paarungen*. München: C. Bertelsmann Verlag, 2010, p. 90:

‘The German average,’ N. said, ‘is nine, in the course of one life, for men. And six for women.’ (Der deutsche Durchschnitt, sagte N., sind neun, im Laufe eines Lebens, bei den Männern. Und sechs bei den Frauen.)

[14] Poggio Bracciolini, ‘XLVII – A Priest’s Awkward Question’ in *The Facetiae of Poggio and Other Medieval Story-Tellers*. (Translated by Edward Storer) London: G. Routledge & Sons / New York: E.P. Dutton, 1928, pp. 74–75.

[15] Clio Cresswell, *Mathematics and Sex*. Crows Nest (New South Wales): Allen & Unwin, 2003, p. 56.

[16] Julian Barnes, *Pulse*. London: Jonathan Cape, 2011, p. 107:

[...] Do you think – present company excepted – that people lie more about sex than about anything else? ‘Is that supposed to be the case?’ ‘There’s good anecdotal evidence, I’d say.’ ‘And, I think, scientific evidence.’ ‘You mean, people admitting to social surveys that they’d lied about sex in previous surveys?’

[17] A justification for such an extrapolation comes from Michele G. Alexander and Terri D. Fisher, Truth and consequences: Using the bogus pipeline to examine sex differences in self-reported sexuality. *Journal of Sex Research*, 40(1), 2003: 27–35.

[18] Sarah Blaffer Hrdy, *The Woman That Never Evolved*. Cambridge: Harvard University Press, 1981, p. 176:

If there were no such thing as a “compromising” situation, what would women do?

[19] And, conversely, without the influence of macho culture, men may also present a more realistic total number of sex partners.

[20] Maybe this is the reason why in 2014 the subtitle of the German *Promi Big Brother* became ‘The Experiment’ (‘Das Experiment’).

[21] John Wilmot, the Earl of Rochester, ‘Song’, in *The Complete Poems of John Wilmot Earl of Rochester*. (Edited and introduced by David M. Vieth), New Haven: Yale University Press, 2002 [1962], p. 48:

Though cunt be not coy, reputation is nice.

[22] Ovid, *Metamorphoses*, III.333. The intimation that both Jove (Zeus) and Juno (Hera) claimed that the opposite sex finds more pleasure in sexual behavior might already give us some food for thought.

[23] Pseudo-Apollodorus, *Bibliotheca*, (c. 100 AD), III.6.7.

[24] Giordano Bruno, *De la causa, principio et uno*. Hamburg: Felix Meiner Verlag, 2007 [1584], pp. 182–83:

Polihimnio «Et os vulvae nunquam dicit: sufficit»

(Echoing and amplifying Book of Proverbs 30:16.)

[25] E. Heinrich Kisch, *The Sexual Life of Woman in its Physiological, Pathological and Hygienic Aspects*. New York: Rebman Company, 1910, p. 168 [Das Geschlechtsleben des Weibes in physiologischer, pathologischer und hygienischer Beziehung.

Berlin und Wien: Urban & Schwarzenberg, 1904, pp. 171–72].

[26] J. G. Fichte, *Grundlage des Naturrechts nach Principien der Wissenschaftslehre – Zweiter Theil oder Angewandtes Naturrecht*. Jena & Leipzig: Christian Ernst Gabler, 1797, p. 167:

Daß ich alles kurz zusammenfasse: Im unverdorbenen Weibe äussert sich kein Geschlechtstrieb, und wohnt kein Geschlechtstrieb, sondern nur Liebe; und diese Liebe ist der Naturtrieb des Weibes, einen Mann zu befriedigen.

[27] L. P. Hartley, *The Go-Between*. Harmondsworth: Penguin Books, 1973 [1953]:

‘Nothing is ever a lady’s fault; you’ll learn that,’ Lord Trimingham told me.

[28] The difference being between Eve, who is frail and thus easily seduced, and Lilith, who is innately, naturally corrupt, a seductress herself.

[29] Sarah Hrdy Blaffer, ‘Empathy, Polyandry, and the Myth of the Coy Female’ in R. Bleier (ed.), *Feminist Approaches to Science*, New York: Pergamon Press, 1986, pp. 119–146.

[30] Mary McCarthy, *The Group*. New York: Harcourt, Brace & World, 1963, p. 88.

[31] George Etherege, *She Would if She Could* (1668) Act II, Scene ii, Lines 4–5:

Lady Cockwood: Ingrateful man! to be so insensible of a lady’s passion!

[32] Faramerz Dabhoiwala, *The Origins of Sex: A History of the First Sexual Revolution*. London: Allen Lane, 2012. Of course there are many exceptions to this rule. For example, Lucette Gautier in Georges Feydeau’s *Un fil à la patte* (1894) is a highly sexual and a socially successful woman. And, on a more general level, it is debatable whether [1] in the history of sexual mores there is a straightforward ‘civilizing process’ (Prozeß der Zivilisation) or rather a pendulum movement swinging between private permissiveness and societal repression and [2] whether it is a global or rather a local process or phenomenon. Moreover, it can be argued that also in Victorian times there were three basic career options for women: Madonna, mother and prostitute.

[33] Laura Zigman, *Animal Husbandry*. London: Arrow Books, 1999 [1998], p. 265:

There was a huge piece by an ad hoc collective of feminists, decrying Dr. Goodall’s findings as intrinsically sexist and arguing that females were just as polygamous as males. “Fuck!” I whispered.

The author, Laura Zigman, may have meant ‘promiscuous’ rather than ‘polygamous’.

[34] Germaine Greer, *The Female Eunuch*. New York: Bantam Books, 1971 [1970], p. 118:

[...] perhaps it does mean that women have always been in closer contact with reality than men: it would seem to be the just recompense for being deprived of idealism.

[35] Hauke Brost & Marie Theres Kroetz-Relin, *Wie Frauen ticken – Über 100 Fakten, die aus jedem Mann einen Frauenverstehermachen*. Berlin: Schwarzkopf & Schwarzkopf, 2008, p. 141:

Hinzu kommt – auch das wollen wir nicht verschweigen –, dass ziemlich viele Frauen ein T-Shirt mit dem Aufdruck »Ich bin eine berechnende Schlampe« verdient hätten. (In addition – and we do not want to hide the fact – quite a few women deserve a T-shirt that says “I am a calculating slut”.)

[36] The crux of the OED definition is in the qualitative present participle ‘undiscriminating’. Even though behaviorally they may do the same thing, according to this definition promiscuity may be attributed differently to men and women. Or rather, if men are indiscriminating they fit the definition and if women are discriminating they do not fit the definition. This difference in ‘discrimination’ is also the reason why it is easier for women than for men to find a sex partner at all. That is, especially, if we understand women to be young, attractive, or fertile – and ideally with all three characteristics combined – and if we exclude explicitly bought sex (e.g. prostitution) and forced sex (e.g. rape).

[37] Tim Birkhead, *Promiscuity – An Evolutionary History of*

Sperm Competition and Sexual Conflict. London: Faber and Faber, 2000, p. 199. In this quoted passage ‘reluctant’ may not be *le mot juste* as it implies, like ‘choosy’, emotions and motives. ‘Unpromiscuous’ is probably the most neutral term.

[38] *Ibid.*, p. ix.

[39] Glenn Wilson, *The Coolidge Effect – An Evolutionary Account of Human Sexuality*. New York: William Morrow and Company, 1982 [1981], p. 50:

The real difference between men and women in extramarital sexuality is not so much in the behavior as in the desire and the motive.

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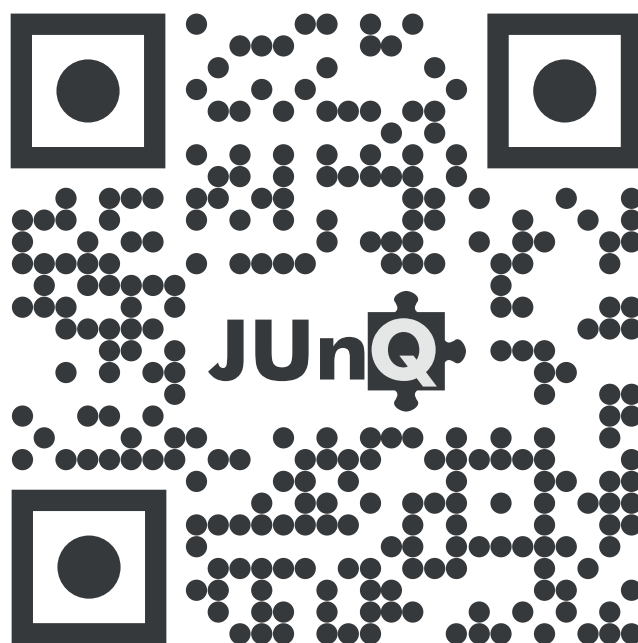
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Verleger und Herausgeber: David Huesmann and Kristina Klinker, Duesbergweg 10–14, 55128 Mainz, Germany

Druckerei: <http://wir-machen-druck.de>

Verantwortliche Redakteure: David Huesmann and Kristina Klinker

Rechtsform: JUnQ ist ein unentgeltliches, wissenschaftliches und spendenfinanziertes Projekt, das Nullresultate als wichtige Beiträge zum Erkenntnisgewinn etablieren möchte. JUnQ wird finanziell von der Johannes Gutenberg-Universität Mainz, Graduiertenschule der Exzellenz Materials Science in Mainz, unterstützt.



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