

Mayer and Krechetnikov (2012) investigated the annoying habit of coffee spilling out of its cup while the coffee drinker is walking, which is obviously a work health and safety concern. Using experimental physics, they studied the conditions under which coffee spills for various walking speeds and initial liquid levels in the cup

It was discovered that significantly more marked teaspoons (6) were lost than forks (1). In stark contrast, unmarked cutlery showed increases for both teaspoons (5) and forks (2). This led the authors to contemplate whether introducing new utensils had an attractive effect on unmarked utensils, or whether it would have been better to conduct the study during Easter, when resurrection is a recognised and documented phenomenon.

The time series for the marked utensils revealed that the count of marked forks had dropped substantially at the second week 2 time point, but rapidly recovered during week 3. This pattern also applied, albeit less clearly, to the marked teaspoons (Figure 3). These utensils may have been victims of kleptomania, individual expropriation or used for a morning or afternoon tea celebration and not returned until thoroughly cleaned by an obsessive staff member.

In regard to where the missing cutlery could have gone, Lim et al. (2005) speculated that teaspoons may be escaping through space to a world inhabited entirely by spoon life-forms, although workplace kleptomania and laziness may provide a more likely answer.

Spilled coffee

Other studies focused on drinks and food routinely consumed in the workplace. Mayer and Krechetnikov (2012) investigated the annoying habit of coffee spilling out of its cup while the coffee drinker is walking, which is obviously a work health and safety concern. Using experimental physics, they studied the conditions under which coffee spills for various walking speeds and initial liquid levels in the cup (Figure 4). The motion was examined using an image analysis program written in MATLAB, while the instant of a spill was determined with a light-emitting diode (LED) signal triggered by a sensor monitoring the coffee level in the cup. It was shown that the particularities of the common coffee cup sizes, the coffee properties and the biomechanics of walking are responsible for the spilling phenomenon.

Examining methods to reduce such spillage, Han (2016) suggested walking backwards (acknowledging associated work health and safety issues) or using the ‘claw-hand’ method of carrying the coffee cup (around the rim) to suppress the higher-frequency components of the driving force and thus stabilise liquid oscillation.

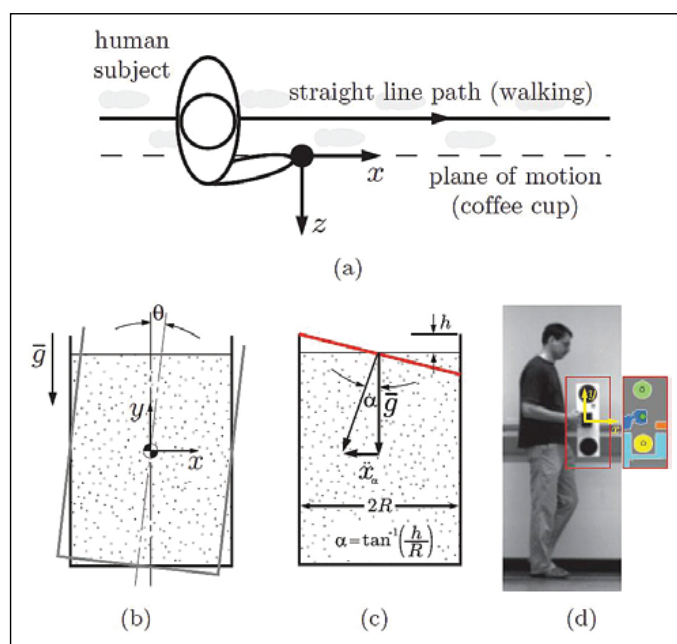


Figure 4: Definition and extraction of the cup dimensions and coordinates in the coffee spill experiments: (a) walking path as viewed from above, (b) plane cup coordinates (x, y) with pitching angle θ and gravity \vec{g} , (c) spill angle α and equivalent acceleration \ddot{x}_α , and (d) MATLAB image analysis (Mayer and Krechetnikov, 2012).

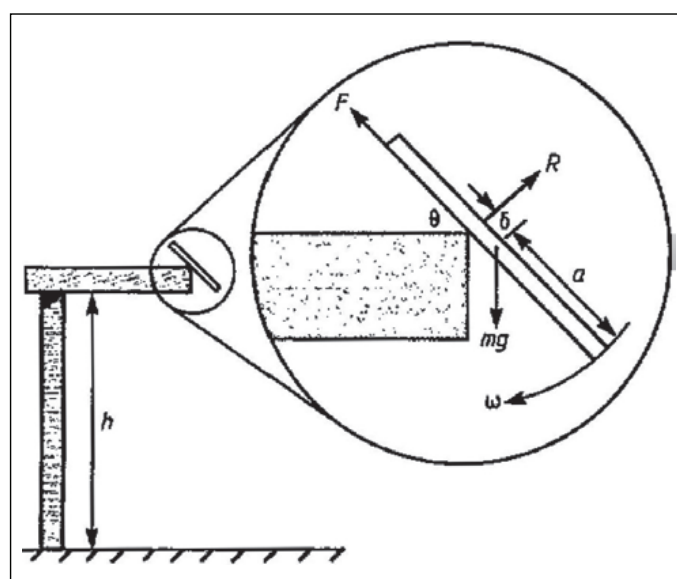


Figure 5: Initial orientation of the rotating toast of mass m and length $2a$ with angular velocity ω , falling from a table of height h as its centre of gravity overhangs the table by a distance δ (Matthews, 1995).

For those dreading to attend the next work-related party, Armstrong (2020) presented a solution on how to maximise your positive impact on the social gathering and then escape discreetly as soon as possible, dubbed Gradual Freeze-Out of an Optimal Estimation via Optimisation of Parameter Quantification (GFOOEOPQ)

Tumbling toast

Moving on to food, Matthews (1995) studied the dynamics of toast tumbling from a table to the floor. Popular opinion is that the final state is usually butter-side down, following Murphy's Law (if it can go wrong, it will). The contrasting view is that the phenomenon is essentially random, with a 50/50 split of possible outcomes. Using theoretical and experimental evidence (Figure 5), he showed that toast does indeed have an inherent tendency to land butter-side down for a wide range of conditions, due to insufficient angular rotation (or spin) during the fall. In other words, the material properties of slices of toast and their size relative to the height of the typical table are such that, in the absence of any rebound phenomena, they lead to a distinct bias towards a butter-side down landing. However, this can be counteracted by increasing the horizontal velocity applied to the toast when sliding off a tilted plate or leaving the table after being struck by a hand or arm.

Bacon et al. (2001) revisited the tumbling toast problem, taking advantage of video analysis software to aid the experimental investigation and sophisticated modelling programs to facilitate the numerical solution of non-linear differential equations. A plywood board of roughly the same dimensions as a piece of toast was used because the unevenness of the toast surface, its crumbly nature, variations from slice to slice, and its tendency to become hard and brittle over time affected the reproducibility of the experiments. They measured the coefficients of kinetic and static friction for the board and presented calculations of the expected angular velocity of free fall using a theoretical framework that included slipping (when the toast

begins to slide off the table's edge). The theoretical free-fall angular velocities were compared to previous calculations and experimental results obtained from video recordings of the tumbling board. This determined that slipping plays an essential role in the dynamics of tumbling toast and must be considered to get agreement with measured angular velocities. Finally, the total angle of rotation (during free fall from a table) was computed for various overhangs and the results compared with observations to confirm the tendency of butter-side down landings, albeit at a lower percentage.

In another food-related study, Stevance (2021) used artificial intelligence to prove that Jaffa Cakes are indeed cakes and not biscuits, despite their small size and host environment (the biscuit aisle). She trained two artificially intelligent binary classifiers generally used in the field of astronomy (a Random Forest and a Support-Vector Machine) on 92 recipes of traditional cakes and biscuits. Each recipe was normalised by total weight and classified by the Wet-To-dry Fraction (WTF index) to indicate how moist (or wet) the mixture is, providing a very informative distinguishing feature between cakes and biscuits. Two Jaffa Cake recipes were then fed to the algorithms, determining that these are, without a doubt, cakes. This result is further supported by the physical properties of Jaffa Cake, which hardens rather than softens when becoming stale.

Happy chocolate (consumption)

Chocolate is another essential commodity in the office environment. Chan (2007) reported on the Chocolate Happiness Undergoing More Pleasantness (CHUMP) study, which was designed to investigate the effects of chocolate consumption on happiness at a tertiary healthcare centre over a 1-month period. The 180 participants were randomised into three study groups. Group 1 received one 50 g dark chocolate bar each day, and group 2 received one 50 g milk chocolate bar each day. Group 3 did not receive any additional chocolate but continued with their normal chocolate-eating habits. Each participant rated their happiness before and after the study using a visual scale (0 = unhappy, 10 = happy), along with their health, global happiness and personal work history.

Data collection proved to be difficult, demonstrating the challenges associated with performing a truly blinded trial. Despite all efforts to the contrary, several participants changed groups mid-study. Some participants in the control group (who received no extra chocolate) started raiding the chocolate of those in the other

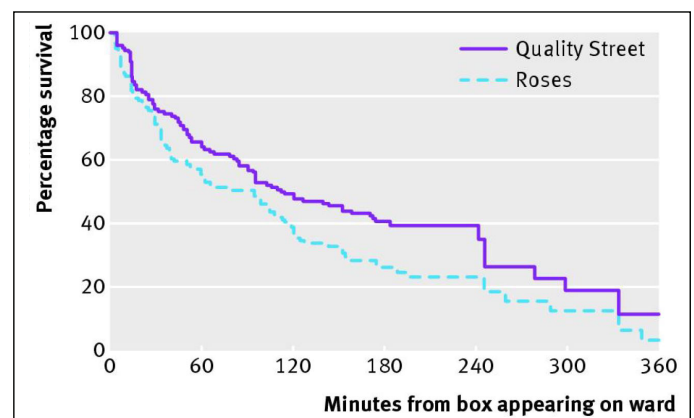


Figure 6: Survival curves for Quality Street and Roses chocolates across all wards (Gajendragadkar et al., 2013).

two groups, while others in the dark and milk chocolate groups traded chocolate based on their individual preferences. The milk chocolate group was the most popular, with the number of participants increasing from 60 at inception to 82 at completion. Furthermore, the occurrence of Halloween may have resulted in crossover contamination as some participants increased their chocolate intake after Halloween by eating extra chocolate that was intended to be distributed to children or by raiding their children's loot bags. Not surprisingly, under these conditions, data analysis failed to prove the strong belief that chocolate consumption leads to more happiness. A far more important indicator of happiness in the CHUMP study appeared to be getting what you want when you want it.

Gajendragadkar et al. (2013) quantified chocolate consumption in a hospital environment by determining its median survival time. Two 350 g boxes of Quality Street and Roses chocolates were covertly placed on four wards at three hospitals in the UK, i.e. the study used a total of 8 boxes containing 258 individual chocolates. These boxes were kept under continuous covert surveillance, with the time recorded when each chocolate was eaten. On average, it took 12 minutes for a box to be opened after appearing. Chocolate survival was relatively low (median survival time of 51 minutes) and modelled well by an exponential decay model (initial rapid consumption rate that slowed over time), with a survival half-life (time taken for 50% of chocolates to be eaten) of 99 minutes (Figure 6). Chocolates were consumed primarily by healthcare assistants and nurses (28% each), followed by doctors (15%), and Roses chocolates were preferred to Quality Street chocolates. There was a trend that healthcare assistants and nurses preferred Roses chocolates, whereas doctors preferred Quality Street chocolates. However, examination by staff role showed preference for one type of chocolate to be statistically insignificant.

Conclusion

The selected studies have analysed some of the shenanigans occurring in

the office environment and answered some intriguing questions related to the workplace. It is hoped that highlighting these issues will contribute to increased happiness and harmony. Substituting your next birthday cake for a new bunch of forks or teaspoons may go a long way towards achieving this goal.

Finally, for those dreading to attend the next work-related party, Armstrong (2020) presented a solution on how to maximise your positive impact on the social gathering and then escape discreetly as soon as possible. The procedure, dubbed Gradual Freeze-Out of an Optimal Estimation via Optimisation of Parameter Quantification (GFOOEOPQ), employs artificial intelligence and is based on Bayes' Theorem where the probability of a future model state depends on current knowledge of the model. First, the user completes the necessary interactions for making favourable impressions, or at least ensuring that these people later remember seeing them at the event, and identifies possible exits (including the density of people at these locations and the general flow rate between regions). Once enough data is collected, GFOOEOPQ (pronounced *gʌfʊi:ɔ:p^kw*) identifies the exit that minimises the chance that anyone notices how early the user sneaked out. To achieve this, GFOOEOPQ employs a tempering procedure that iteratively arrives at the global optimum of a dynamic model, which remains valid only for a limited time due to the dynamic nature of the situation (i.e. "glance at the solution, glance over your shoulder, and then go for it or abort"). Tips for optimal interactions were also given, noting that the procedure can be generalised to corporate events and family gatherings if required.

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