Quantum Random Lunch Generator (QRLG)*

Amit Singh,† Lewis Powell,‡ and Nick Kay
Department of Physics and Gastronomy, Kingdom of Moles, Munchester
(Dated: 1st April 2025)

Lunch is important and choosing where to have lunch is difficult. In this paper we demonstrate use of quantum randomness to find a place to eat, thus shifting the decision-making to the vacuum fluctuations of the universe. This QRLG is made publicly available.

I. INTRODUCTION

Lunch breaks are known to significantly impact employee well-being and performance [1, 2]. However, spending time choosing where to go for lunch can cut into vital lunch time. Additionally, opposing opinions of lunch locations may lead to disunity within otherwise harmonious research groups - ultimately costing the taxpayer.

One solution which alleviates the need for manual masticatory decisions is to randomly determine a lunch location. This can be done by compiling a list of gastronomical locales and using a pseudo-random number generator (PRNG) such as a dice roll or pseudo-random computer algorithm. Firstly, PRNGs are not deemed adequate as they do not contain the word 'quantum' and secondly the list of luncheon venues is highly dynamic and keeping track is not a straightforward task.

In this work we introduce a novel method of choosing where to eat by leveraging the inherently random nature of quantum mechanics. Additionally, our algorithm is robust with respect to changes in the local culinary landscape as it uses a web API to automatically populate a list of eateries.

II. QRLG WORKFLOW

All the calculations were performed using our QRLG code and tested on 2-8 students and postdocs during luncheon. The workflow of the code is shown in **Fig.1a-d**. Initially, the QRLG identifies the dining options within a specified radius, as depicted in **Fig.1a-b** [3] . Subsequently, a restaurant is chosen via the quantum random number generation (QRNG) technique [4, 5]. This QRNG employs broadband measurements of the vacuum field within the radio-frequency sidebands of a single-mode laser to produce random numbers [4]. Ultimately, a single restaurant is selected using the output from QRNG for lunch. The parameters of the code were optimized from the inputs of the participants and non-participants.

III. RESULTS

To test the system we attended a statistically insignificant number of random lunches over a period of several months. As a controlled study, we also ate lunch several times after manually choosing where to eat. Initially, enthusiasm was high, leading to strong participation and elevated levels of happiness (as assessed by in-person attendance and engagement with the discussions and content of the talks). However, after a few weeks, interest waned, resulting in decreased participation. Subsequent attempts to revive interest were unsuccessful, leading to a continued decrease in participant numbers, as shown in **Fig.1e**.

In summary, it was found that disdain for the QRLG ended up higher than that of other colleagues lunch choices. It did, however, produce a group-bonding effect through a unified exasperation at the vacuum fluctuations of the multiverse.

IV. OUTLOOK

As all the founding members of the QRLG have graduated, are nearing graduation, or will soon be leaving the city, we highly encourage everyone to embrace our legacy. It's time to cease disputes over lunch and instead appreciate the universe's inherent chaos and quantum randomness.

ACKNOWLEDGMENTS

We wish to acknowledge the support of Yashar Mayamei, Stephen Tipper, Noel Natera Cordero, Luigi Maduro, Sofia Konyzheva, Matheus Suenson Cardoso (very low participation rate), Eoin Griffin, and Pablo Díaz Núñez (Pablito) for their valued suggestions and lunch attendance despite their lack of coding contributions. The authors would like to declare a comp-eating interest in the form of Subway featuring highly on the list of lunch destinations.

This research was financially supported by the Everyday Lunch Flagship.

---

* We would like to clarify that we are independent individuals and do not represent or affiliate with any university, institution, or company. All opinions, ideas, and content presented are solely our own and do not reflect the views or endorsements of any organization.

† amitletit@gmail.com
‡ lewis.powell@manchester.ac.uk

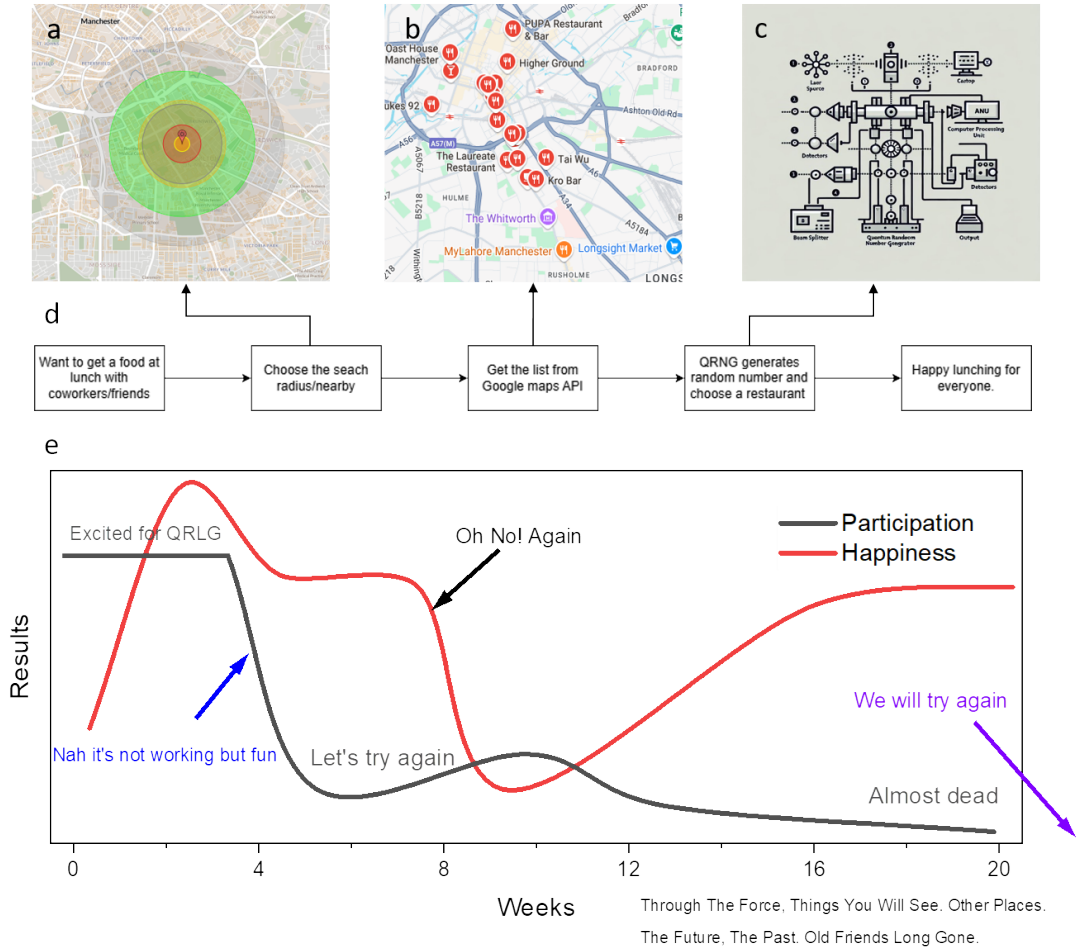

FIG. 1. **QRLG search radius of restaurants and workflow. a,** The search radius for restaurants in Google Maps API. The map was generated using `nuclearsecrecy.com`. The red, yellow, green, and gray areas represent the areas of the search radius depending on the available time for lunch. **b,** All the restaurants which appeared in one search for food within a ~ 800 m radius of the Schuster building. **c,** Schematic representation of the QRNG generated using Microsoft Copilot AI image generator. **d,** The QRLG algorithm workflow to decide a restaurant to choose for lunch. **e,** Schematic of the participation and happiness of researchers as a function of number of weeks using QRLG for deciding lunch.

Appendix A: *Code Availability*

All the code used to generate the random places for the lunch are available in the GitHub repository. (`https://github.com/amitletit/RLG`) All the reviews given by QRLG participants are compiled together in the work file and can be accessed using the link. `https://docs.google.com/document/d/1qK3fAqRB2WoqSXMurmVmx_leqGO5IGiOVTznmfsr_KI/edit?usp=sharing`

[1] S. Hakro, A. Jameel, A. Hussain, M. S. Aslam, W. A. Khan, S. Sadiq, and A. Nisar, A lunch break time and its impact on employees health, performance and stress on work, Journal of Pharmaceutical Research International **33**, 84–97 (2021).

[2] J. de Bloom, U. Kinnunen, and K. Korpela, Exposure to nature versus relaxation during lunch breaks and recovery from work: development and design of an intervention study to improve workers' health, well-being, work performance and creativity, BMC Public Health **14**, 488 (2014).

[3] Google maps platform tools, accessed: 14.04.2024, https://github.com/googlemaps/.

[4] T. Symul, S. M. Assad, and P. K. Lam, Real time demonstration of high bitrate quantum random number generation with coherent laser light, Applied Physics Letters **98**, 231103 (2011).

[5] J. Y. Haw, S. M. Assad, A. M. Lance, N. H. Y. Ng, V. Sharma, P. K. Lam, and T. Symul, Maximization of extractable randomness in a quantum random-number generator, Phys. Rev. Appl. **3**, 054004 (2015).