

# Gul Agha, A Natural Born Actor

Jean-Pierre Briot<sup>1,2</sup>[0000–0003–1621–6335]

<sup>1</sup> Sorbonne University, CNRS, LIP6, Paris, France  
Jean-Pierre.Briot@lip6.fr <https://webia.lip6.fr/~briot/>  
<sup>2</sup> PUC-Rio, Rio de Janeiro, Brazil

**Abstract.** This short text is a quick summary of the scientific impact of Gul Agha’s contributions on my research, as well as some anecdotes about the wonderful human being that I am very happy to know.

**Keywords:** Gul Agha, homage, impact, anecdotes

## 1 Gul’s Scientific Impact

In the early 80’s, I started my journey into computer science during my PhD, working on the concepts of object-oriented programming. I also participated in applying them to the modeling and processing of musical processes, a research project headed by Pierre Cointe at IRCAM [4], the research institute about music, acoustic and computing in Paris. This was a great experience, because object-oriented programming was burgeoning a lot, and also thanks to the opportunity to meet scientists and musicians from all over the world. There, I met with Henry Lieberman and started discovering the concept of actors, and also met with Akinori Yonezawa, respectively, collaborator and past PhD student of Carl Hewitt, the great visionary about actors and other great ideas. As time and concurrency of events are fundamental in musical processes, I got much interested into actors. In 1985, soon after defending my PhD, I was welcomed by Akinori Yonezawa for a postdoc in his lab in Tokyo, while he was starting to work on the design and implementation of an actor-based language named ABCL [13]. This was another great scientific and human experience.

There, I discovered the thesis [1] and first articles by Gul Agha. I was really impressed with the concision and clarity of his specification of actors. Notably, his concept of behavior replacement was a key contribution to clarify and unify various issues:

- internal concurrency of the processing of incoming messages (as soon as the behavior replacement is defined),
- (as well as) their synchronization (until the behavior replacement is defined),
- (and furthermore) regaining pure functional properties.

This clean foundation of actor programming gave me the inspiration to implement and classify various models of actors and concurrent objects in the

Smalltalk environment [2, 3]. It also served as a foundation for implementing agents [6], as multi-agent systems were now burgeoning. Further works by Gul and his team, e.g., about coordination languages [5], meta-level programming [11], dynamic adaptation [12], fault-tolerance [10], etc., were also very influential for my own projects, e.g., about fault-tolerant multi-agent systems [8, 7]. Gul and I met on various occasions, in USA, France and other locations. I had the chance to visit Gul's lab at UIUC for a few months. And it was a great resourcing experience.

## 2 Gul's Personality

Through our encounters, I discovered Gul's amazing personality. He is always calm, positive, opened, generous and has a nice and peculiar sense of humor. He is also very serious about veganism<sup>3</sup>, while being a *bon vivant*. We also have some mutual interests in topics such as culture, music and spirituality.

Some nice experience was after the PhD defense of Salima Hassas, in Lyon University in 1992. Some of the members of the defense committee, Gul, Les Gasser, Peter de Jong and me, made some gastronomy/oenology short tour in the close Beaujolais region. We had the experience of a marvelous lunch (and wine :) at the famous and Michelin starred Auberge du Cep, in Fleurie (a village in the Beaujolais region, as well as likely the most elegant Beaujolais appellation). Coming back to Lyon though the little roads was also unforgettable, the roads were purple, as harvesting had just happened, the air full of grape perfumes, and the winery buildings filled with the delicate noise of the grape juice ongoing fermentation. Hopefully (for us), Peter de Jong did not drink alcohol and thus happily took the responsibility for driving!

An unexpected encounter was in Rio de Janeiro during the Middleware 2003 conference. I had a paper accepted with Frédéric Peschanski [9], who after a PhD with me was doing a post-doc in Tokyo in Akinori Yonezawa's lab. We both arrived in Rio de Janeiro, him from Tokyo, me from Paris. I tried to call him at his hotel. The lobby connected me to some room. I guess that I said something like "Salut Frédéric", expecting to have him on the phone. But the person who replied me was definitely not Frédéric. At the same time, I thought "I know this voice!". Moreover, I had the feeling that this person was also reflecting about my own voice. Until, after a few seconds of silence, both Gul and I simultaneously realized about us<sup>4</sup>!

When I asked how he was and when he arrived in Rio, Gul answered me that he was just coming back from a walk on Copacabana beach (where his hotel was located), and that his watch had just been stolen. He added that he just had bought a new watch from some informal seller on the beach, adding that it was likely that this watch had been recently stolen too! Anyway, this was the

---

<sup>3</sup> This was a shock to me when I discovered the existence of a Meat Science Laboratory at UIUC.

<sup>4</sup> It is worth mentioning that I had no a priori information about the venue of Gul to the conference (and I guess vice versa).

opportunity to have a great dinner in Rio for the three of us. And soon after, Gul welcomed Frédéric for a wonderful short research stay in his lab at UIUC.

### 3 Conclusion

It has been a great chance for me to know Gul's scientific work and also him as a person. Congratulations Gul! Thank you for all your contributions, openness and generosity! Thank you for inspiring so many colleagues and students! Thank you for these great shared moments! All my best wishes for you and your family!

Jean-Pierre

### References

1. Agha, G.: *Actors – A Model of Concurrent Computation in Distributed Systems*. Series in Artificial Intelligence, MIT Press (1986), ISBN: 978-0-262-01092-4
2. Briot, J.P.: Actalk: a testbed for classifying and designing actor languages in the Smalltalk-80 environment. In: Cook, S. (ed.) *European Conference on Object-Oriented Programming (ECOOP'89)*. pp. 109–129. British Computer Society Workshop Series, Cambridge University Press, Nottingham, U.K. (Jul 1989), ISBN: 0-521-38232-7
3. Briot, J.P.: An experiment in classification and specialization of synchronization schemes. In: Futatsugi, K., Matsuoka, S. (eds.) *Object Technologies for Advanced Software (ISOTAS'96)*. pp. 227–249. No. 1049 in LNCS, Springer, Kanazawa (Mar 1996)
4. Cointe, P., Briot, J.P., Serpette, B.: The Formes language: A musical application of object-oriented concurrent programming. In: Yonezawa, A., Tokoro, M. (eds.) *Object-Oriented Concurrent Programming*, pp. 221–258. Computer System Series, MIT Press (1987), ISBN: 0-262-24026-2
5. Frølund, S., Agha, G.: A language framework for multi-object coordination. In: Nierstrasz, O.M. (ed.) *ECOOP '93: Proceedings of the 7th European Conference on Object-Oriented Programming*. pp. 346–360. No. 707 in LNCS, Springer (1993). [https://doi.org/10.1007/3-540-47910-4\\_18](https://doi.org/10.1007/3-540-47910-4_18)
6. Guessoum, Z., Briot, J.P.: From active objects to autonomous agents. *Concurrency* **7**(3), 68–76 (Jul–Sep 1999). <https://doi.org/10.1109/4434.788781>, Special Series on Actors and Agents, edited by Dennis Kafura and Jean-Pierre Briot
7. Guessoum, Z., Briot, J.P., Faci, N., Marin, O.: Towards reliable multi-agent systems - an adaptive replication mechanism. *Multiagent and Grid Systems (MAGS) – An International Journal* **6**(1), 1–24 (Mar 2010). <https://doi.org/10.1145/1082983.1082977>
8. Marin, O., Bertier, M., Sens, P., Guessoum, Z., Briot, J.P.: Darx – a self-healing framework for agents. In: Kordon, F., Sztipanovits, J. (eds.) *Reliable Systems on Unreliable Networked Platforms*. pp. 88–105. No. 4322 in LNCS, Springer (2007). [https://doi.org/10.1007/978-3-540-71156-8\\_5](https://doi.org/10.1007/978-3-540-71156-8_5)
9. Peschanski, F., Briot, J.P., Yonezawa, A.: Fine-grained dynamic adaptation of distributed components. In: *Middleware 2003 - ACM/IFIP/USENIX International Middleware Conference, Rio de Janeiro, Brazil, June 16-20, 2003, Proceedings*. pp. 123–142. No. 2672 in LNCS, Springer (Jun 2003). [https://doi.org/10.1007/3-540-44892-6\\_7](https://doi.org/10.1007/3-540-44892-6_7)

10. Sturman, D.C., Agha, G.: A protocol description language for customizing failure semantics. In: Proceedings of the 13th International Symposium on Reliable Distributed Systems. pp. 148–157. IEEE, Dana Point, CA, USA (1994). <https://doi.org/10.1109/RELDIS.1994.336900>
11. Varela, C.A., Agha, G.: A hierarchical model for coordination of concurrent activities. In: Ciancarini, P., Wolf, A.L. (eds.) Coordination Languages and Models, pp. 166–182. No. 1594 in LNCS, Springer (1999). [https://doi.org/10.1007/3-540-48919-3\\_13](https://doi.org/10.1007/3-540-48919-3_13)
12. Varela, C.A., Agha, G.: Programming dynamically reconfigurable open systems with Salsa. SIGPLAN Notices **36**(12), 20–34 (Dec 2001). <https://doi.org/10.1145/583960.583964>
13. Yonezawa, A., Briot, J.P., Shibayama, E.: Object-oriented concurrent programming in ABCL/1. In *Conference on Object-Oriented Programming Systems, Languages and Applications (OOPSLA '86)*. SIGPLAN Notices **21**(11), 258–268 (Nov 1986), ISBN: 0-89791-204-7