

## Sleeping Beauties in Psychology

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### Abstract

A ‘Sleeping beauty’ is a term used to describe a research article that has remained relatively uncited for several years and then suddenly blossoms forward. New technology now allows us to detect such articles more easily than before, and such sleeping beauties can be found in numerous disciplines. In this article we describe three sleeping beauties that we have found in psychology – Stroop (1935), Maslow (1943) and Simon (1956).

Keywords: citations, history of psychology, Web of Science, Science Citation Index Expanded

As readers of this journal will know, a ‘sleeping beauty’ is a term that is used to describe a research article that remains relatively uncited for several years and then suddenly blossoms forward in this respect (van Raan, 2004). An article that ‘awakens’ such a sleeping beauty is, relatedly, often called a ‘prince’. Such ‘sleeping beauties’ can be distinguished from articles that are a ‘flash in the pan’ – i.e., articles that are highly cited at some particular point in their history and then promptly forgotten (Li, 2014).

Sleeping beauties have been identified in several disciplines (Table 1) and also in specific journals. Li and Ye (2012), for example, present some examples of delayed discoveries in *Nature* and Kozak (2013) describes and discusses ones in *Current Science*.

Table 1 about here

Modern computer-aided searching allows us to look for sleeping beauties more easily and more thoroughly than before. Today several different researchers have developed different tools for doing this (e.g., Du and Wu, 2016; Ke et al., 2014; Li et al., 2014; Wand et al., 2012). In this paper we describe the results that we obtained using a measure devised by Yuh-Shan Ho (Ho, 2014), one of the authors of this paper.

More specifically we examined 303,255 documents in the psychology category of the Science Citation Index Expanded database of the Web of Science (updated on 18 July, 2016). We used three main measures:

- 1: the total number of citations to a paper from initial publication to the end of 2015.
- 2: the total number of citations to a paper in 2015 only.
- 3: the total number of citations in the period of sleep.

Using these data we found three sleeping beauties among 303,255 citations to articles in Psychology – those of Stroop (1935), Maslow (1943), and Simon (1956). Table 2 provides some summary data about these citations and their periods of rest.

Table 2 about here

Figures 1, 2, and 3 show the how each of these papers lay dormant for forty years or more before being awakened, by a ‘prince’ (Braun et al., 2010; Van Raan, 2005; Wang et al., 2012).

Figures 1, 2, and 3 about here

So why were such papers dormant and then ‘awakened’ from their sleep? In this case there appears to be three reasons – one for each paper. Stroop provided a methodology that proved to be effective and easy to use in later studies in (different) areas of psychology. Maslow’s notions about the nature of psychology - initially unpopular and idiosyncratic – came into fashion as psychology became more person-centred in the 70s. Simon was prescient enough to see how computer-aided models of decision making grounded in Economics would develop in psychology but it took time for people to realise this.

However, what we have *not* shown in this article is *why* these particular papers were awakened after such delays, and by whom. Subsequent analyses are needed to discover who made the citations that led to the re-discovery of these papers, and whether or not today sleeping beauties are simply footnoted as having made a major contribution to the field rather than discussed in detail.

Finally, it is perhaps worth observing that there may still be sleeping beauties out there undetected, or about to be awakened in different disciplines. We note with interest that Shwartz and Pfister (2016) have recently discovered the work of a certain Ferdinand Ueberwasse (1752-1812). This gentleman was apparently writing about psychology as a discipline approximately 100 years before Wilhelm Wundt.

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Table 1. Articles on sleeping beauties in different disciplines

Disciplines	References
Linguistics and psycholinguistics	Levelt (2015)
Medical and biological engineering	Huang et al. (2015)
Ophthalmology	Ohba and Nakao (2012)
Philosophy	Healy (2015)
Physical and engineering sciences	van Raan (2015)
Psychology	Lange (2005)
Radiology	Gorry and Ragouet (2016)
Science	van Raan (2004); Ke et al. (2014); Li and Ye (2016)

Table 2. Comparison data for three sleeping beauties in psychology

Author/date of publication	Total no. of citations	No. of years sleeping	No. of citations when sleeping
Stroop (1935)	7,518	32	64
Maslow (1943)	2,550	23	45
Simon (1956)	1,184	29	58



Figure 1. The Sleeping Beauty life of Stoop (1935)

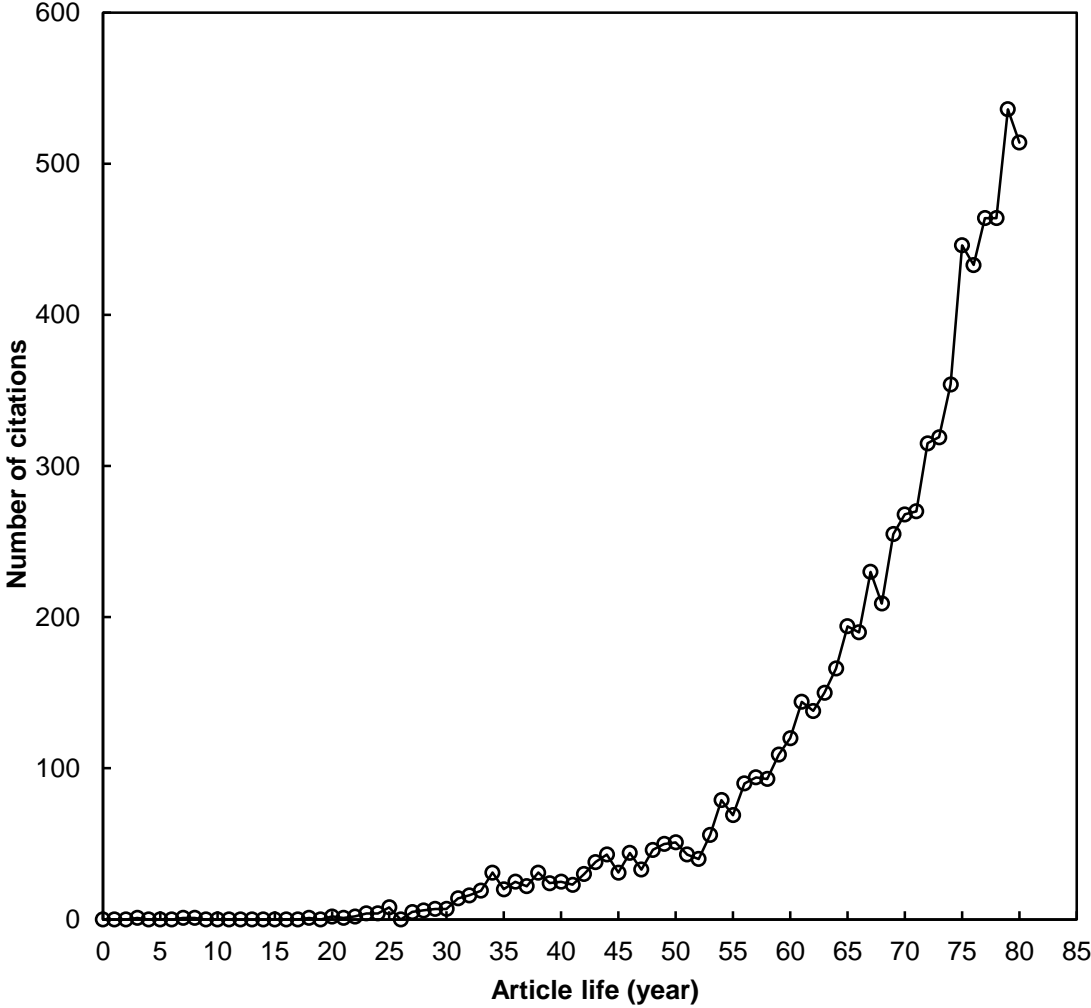


Figure 2. The Sleeping Beauty life of Maslow (1943)

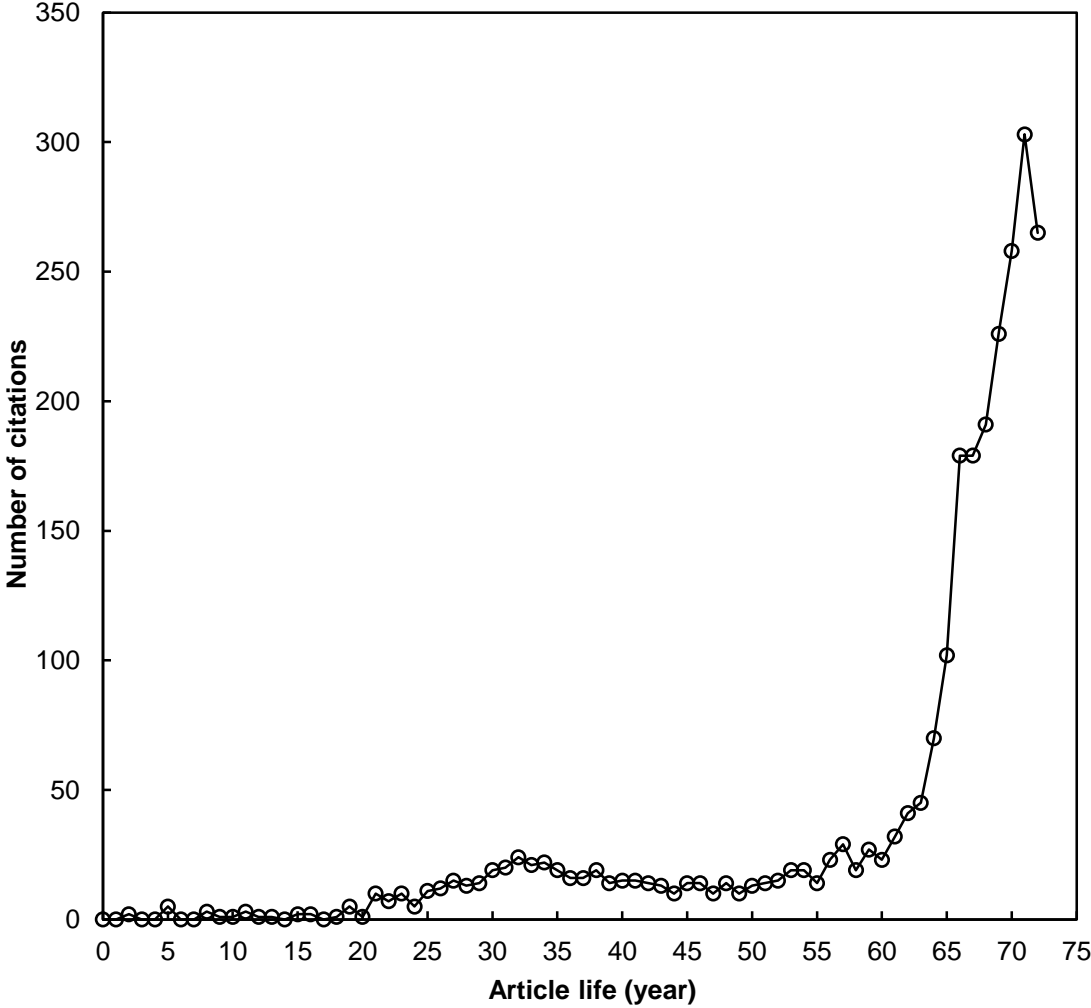


Figure 3. The Sleeping Beauty life of Simon (1956)

