

Redland Past Revisited for the Redland Directory - No. 24

The Tardis in Redland, or just house name for the numerate? © Julian Lea-Jones July 2009

In Greendale Road in the late 1980's I noticed this unusual house name and was intrigued enough to knock on the door and ask why. Far from being annoyed at my impertinence, the owner, an amiable grey-haired gentleman, a mathematician, seemed both amused and gratified by my request. Sadly I



didn't write down his explanation. The house now has a new owner and the unique name has gone. My thanks to Jeremy Rickard of the University of Bristol, who refreshed my memory with this explanation, summarised as: "*the formula [shown here] relates to "algebraic topology" in which some things called "homotopy groups" appear. ...roughly speaking they measure how many "holes" of different dimensions a geometrical object has. A circle has a hole through the middle, (a "one-dimensional hole"). The first homotopy group (also known as the "fundamental group) of a circle is not zero, reflecting this fact. Slightly counter-intuitively, it turns out that, a sphere not only has the obvious "2-dimensional" hole, it also has a "3-dimensional hole"! So mathematically, the third homotopy group of a sphere is not zero.*

The letter "pi" with a subscript 3 is the standard notation for the third homotopy group, and "S" with a superscript "n" is the standard notation for an n-dimensional sphere (so S^1 is a circle, S^2 is a normal sphere, etc.) as defined by the house number formula! A "3-dimensional hole in a 2-dimensional sphere" was first discovered about 1930 by Hopf, a German mathematician, memorialised as the 'Hopf fibration' "

Perhaps the mathematician's house was an estate agent's dream because like the Tardis it occupied many dimensions, and really was 'deceptively spacious'.