



# Populous Single-Origin Families: DNA and Other Findings



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**T**hough most surnames are rare, most people have a populous surname. According to the received wisdom, the most common surnames are multi-origin (i.e. they have a population descended from many distinct medieval origins). This is not discredited by most of the DNA studies available so far. At the turn of the millennium, however, it was claimed that newly available DNA evidence showed that the populous surname Sykes was single-origin. This has since been doubted for several reasons and, on the basis of computer analyses of the evidence, there could well have been other origins to Sykes which died out or grew very little, or which survive as DNA mismatching families. Nonetheless, there seems to be an unusually large family with the Sykes surname, surviving in the counties around West Yorkshire. A similar conclusion has been reached for the Plant surname around Staffordshire.

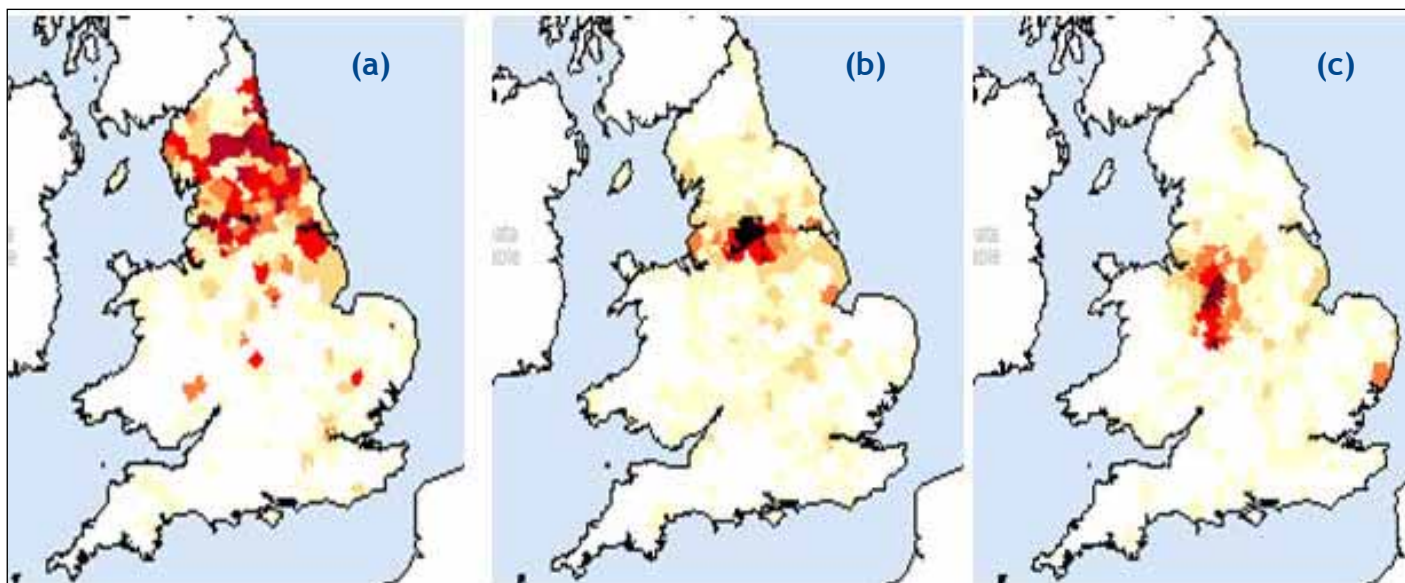
A way of assessing the likely occurrence of single-origin contenders is to examine the 1881 geographical distributions of some populous surnames. This can be done very easily using Steve Archer's Surname Atlas CD. Proceeding on the basis of just their 1881 distributions, the top 140 most common UK surnames all appear to be multi-origin. The most common, Smith, has an 1881 population of 422,733 which is considerably more than for Metcalf (6,065), Sykes (14,383) or Plant (6,615) for example, which are in the top 750 of most common surnames. George Redmonds has claimed that the surname Metcalf is single-origin; but, Figure 1(a) lends this little

support. A little more convincingly, there appears to be a possible dispersal from a single source for the surnames Sykes (Figure 1(b)) and Plant (Figure 1(c)).

Figure 2 displays the four most common single-origin contenders, based on their 1881 distributions, in each of six English counties. These counties are displayed in the order of decreasing Industrial Age growth, during 1761 to 1841. There are large single-origin contenders in West Yorkshire and Lancashire on the left; and, on the right, less populous contenders in Shropshire and Wiltshire. However, overall population growth in a region between 1761 and 1841 does not explain, for the central two counties, why the most populous single-origin contenders in Cheshire have lower populations than those in Staffordshire. A fuller consideration of county population growths and other factors is taken into account for our computer simulations.

Suitable DNA studies are available for Sykes and Plant, which are the second most populous West Yorkshire and Staffordshire contenders (Figure 2), and these studies are consistent with the surnames each having a dominant UK family that has descended and dispersed from a single late-medieval male. Although the initial DNA study for Sykes was low resolution, the strength of its single-origin claim was increased by comparisons with two control groups of non-Sykes men. However, the Sykes evidence more generally tells a diverse story, with a substantial fraction (56.2%) of DNA mismatches, which are perhaps

Figure 1: The 1881 distributions in England and Wales of: (a) Metcalf; (b) Sykes; and, (c) Plant



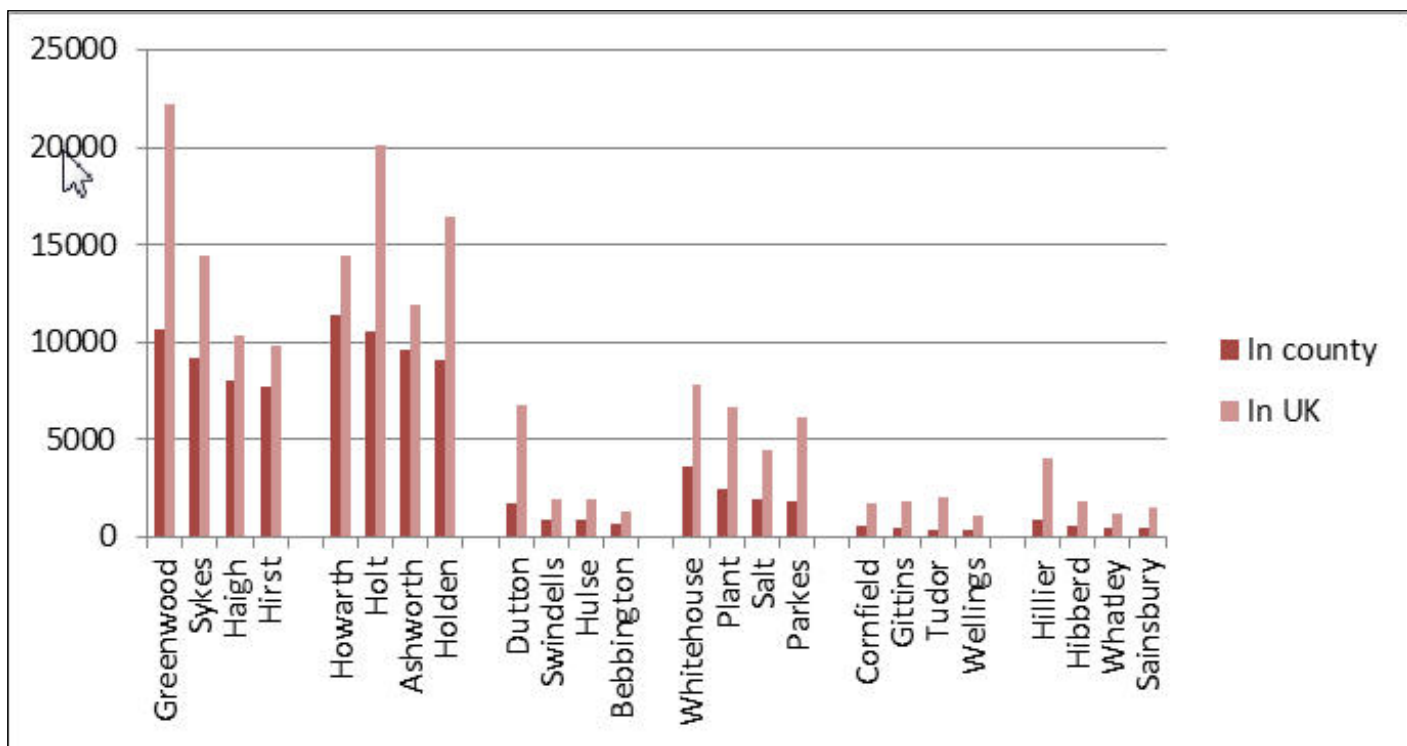


Figure 2: The four most-populous single-ancestor contenders in West Yorkshire, Lancashire, Cheshire, Staffordshire, Shropshire, and Wiltshire

due to non paternity events (NPEs) arising from females passing on the surname, but which can instead be ascribed partly to plural origins of this topological surname; moreover, there are several unrelated Sykes founders in the USA, according to more recent DNA results. By comparison, Plant has fewer (35.5%) mismatches, a somewhat smaller UK population, and DNA results that are more nearly consistent with a single-origin family

that has spread widely, to Ireland, North America and Australia for example. That is not to say that Plant is entirely single-origin; there is a genetically distinct French Canadian family with the different spelling Plante and, for example, also a hint of a small separate-origin Plant family from south Lincolnshire in England.

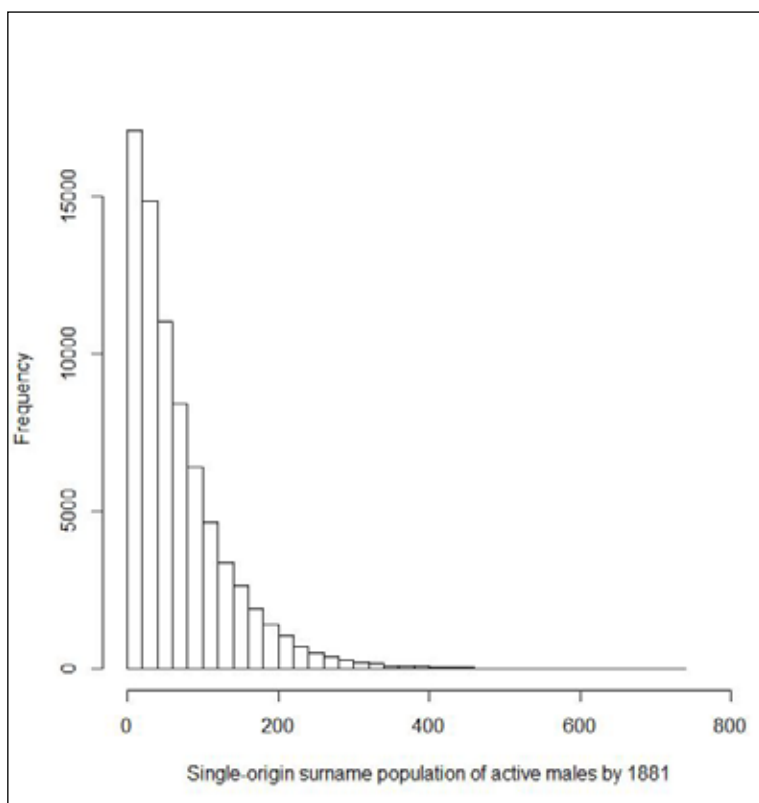


Figure 3: Computed chance (frequency out of 1,000,000 in 1311) of a single-origin family growing to various active-male population sizes by 1881

Figure 3 shows the histogram of single family size by 1881, computed from a type of computer model called a Monte Carlo simulation in which differences in family size occur as a result of pure chance without any additional distinguishing factors. Only reproductively active males are here considered; namely the ones who usually pass on the surname, together with their Y-chromosome which can be DNA tested. In this model, 1,000,000 simulations are computed for an English family starting in 1311 and, by 1881, the family dies out in 92.5% of cases whereas, in the largest outcome, it grows purely by chance to 730 active males, at the barely discernible tail end in Figure 3. Around 1,100 to 1,650 active males are needed to account for the observed population of UK Plants in 1881 which is more than our base-model simulation predicts for a single family, even given exceptional fortuity. One particular limitation of the base model (Figure 3) is that it assumes population growth factors typical of England as a whole. We will pursue this and possible further explanations for prolific family growth in a second part of this article, where we will outline how we have extended our simulation models to compute which additional factors can lead to sufficient chance of a single family growing to the same size as the main Plant family or, more intriguingly, even larger as has been claimed for Sykes.

A fuller account of this study is available on the Guild web-site at <http://www.one-name.org/GettingTheMost-Guild.pdf> where updated editions are being posted. ■