For the purposes of this paper, we aim to classify natural language expressions into three mutually exclusive classes. The definition of these classes is motivated by the goal of geocoding spatial language for purposes such as representation of the objects described in natural language on a map. We consider this goal in a broad context, and maps at a range of scales may be included within this scope. While we are most interested in identifying geospatial language, we also classify spatial language, as this provides easier comparison with other classification schemes (most of which aim to identify spatial, rather than geospatial language), and enables a finer grained analysis of language content.

**Class 2: Geospatial expressions**

Geospatial expressions have the following characteristics:

1. They include a spatial relation, which may take the form of a preposition, or a verb or other word or group of words that describes with the spatial location or movement of one object relative to another.
2. The reference object (also known as landmark or relatum) of the spatial relation is a geographical object. By geographical object, we mean an object that is found outdoors or in transitional spaces that are large and public in nature (Kray et al., 2013); that is static in nature and unlikely to move in the normal course of events AND that is of a scale that is likely to occur on a map. This may range in scale from objects such a street furniture (lamp posts, fire hydrants) up to objects on a global scale, and thus encompasses the some of the objects found in Montello’s vista space, as well as those in his environmental and geographic spaces (Montello, 1993).

**Class 1: Spatial expressions**

Spatial expressions are defined by extension from geospatial expressions. Like geospatial expressions, they contain a spatial relation using the same definition as for geospatial expressions (item 1 above). However, in the case of spatial expressions, the reference object of the spatial relation does not meet the criteria for geospatial expressions (item 2 above). Thus reference objects may be indoor, mobile or small scale.

In expressions that contain both geospatial and spatial elements, the geospatial classification takes precedence over the spatial classification, and thus the following expression is classified as geospatial, since it contains both spatial (bells hanging on rood-screens) and geospatial (in East Anglian churches) elements: “A few sacring bells still exist, hanging on the rood-screens in East Anglian churches.”

**Class 0: Neither spatial nor geospatial expressions**

Class 0 contains all expressions that do not fall into class 1 or 2, being neither spatial nor geospatial, and include expressions that either do not contain spatial relations or contain spatial relations in a metaphoric sense.

Table 1 contains a number of borderline cases, their classification and the reason that the classification was assigned.

|  |  |  |
| --- | --- | --- |
| **Expression** | **Class** | **Explanation** |
| “A baker’s shop gave name to Baker Lane.” | 0 | It may be considered that “gave name to” implies that the baker’s shop was in Baker Lane, and this is thus a difficult case to classify. However, there are cases in which the baker’s shop might give name to the Lane but not be situated in it, so we take a conservative interpretation. |
| “A [sic] enigmatic face *gazes down from* the upper window upon landlady Charlotte (Lottie) Higgins in 1918.” | 2 | “gazes down from” qualifies as a spatial relation, as it describes the location of the face relative to the window, and upper window is part of a larger object (a house), and the house would be likely to appear on a map. The scene takes place outdoors, and the window is static. |
| “A brick and slate sub surface drain was interpreted as having been built to *drain* storm water *from* the roof corner of the Cookhouse/day room” | 2 | The spatial relation “drain” and “from” qualify the expression as either geospatial or spatial, and the reference object “cookhouse” suggests a building, which is outdoors and static. |
| “A disused western doorway *at Gedling* which has jamb-shafts with water-leaf capital, and pointed bowtell in the arch-moulding, has nevertheless a pointed arch, and from this time onwards, the pointed arch prevailed.” | 2 | The discussion of architectural details is spatial as it refers to indoor space, but “at Gedling” makes the expression geospatial. |
| “A *crossed* knife and fork means restaurant car, a goblet symbol means buffet refreshments.” | 1 | “crossed” is a spatial relation, but knife and fork is not outdoors, static or map scale. While this refers to a sign/symbol rather than a physical knife and fork, we still consider it a spatial expression. |
| “A click *on* the back to menu link there will lead you to other fine Serge Brunier photographic projects.” | 1 | “on” is a spatial relation, but the menu link is not outdoors, static or map scale. |
| “A highly waterproof pack is a real bonus for *UK walking*, and it will fit a wider range of back sizes than many on test...” | 2 | While the discussion of the pack fitting on a back is spatial but not geospatial (due to scale and mobility), “UK walking” means walking that occurs in the UK, and makes the overall expression geospatial. |
| “She swung *on* the garden swing.” | 2 | “on” is a spatial relation, and garden swing qualifies as something outdoors, static and could appear on a large scale map. |
| “The seat *on* the verandah.” | 2 | “on” is a spatial relation, and verandah is part of a house, the scene is outdoors and the verandah is static. |