Coextension path expressions with motion verbs conflating instrument in the British National Corpus

1. Introduction
Fictive motion refers to figurative representations of motion attributed to immobile material objects, states, or abstract concepts, in which the meaning of motion verbs is semantically extended to express relations that do not involve motion per se nor change of state. Coextension paths are a specific category of fictive motion expressions used to depict spatial configurations of stationary objects in terms of motion over the object’s extent. It has been established that the choice of verbs in fictive motion is not insignificant or random, but is motivated by mental simulations grounded in embodied cognition. The following research report demonstrates structuring fictive motion with motion verbs conflating instrumentality in the British National Corpus.

2. Methodology
This research employs the British National Corpus (henceforth, the BNC), which is a 100 million word collection of samples of written and spoken contemporary British English from a wide range of texts, genres, and registers (see www.natcorp.ox.ac.uk for more information). Fictive motion expressions are problematic to pick out from corpora because at the syntactic level they are practically indistinguishable from actual motion expressions. Searching for instrumentality in coextension paths was executed by looking for combinations of landmarks that can potentially feature in coextension paths with an ample selection of instrumental motion verbs.

Selecting suitable landmarks followed observations that coextension paths typically describe extended or elongated stationary spatial entities. Starting with a few prototypical ones, such as “road”, “wire”, “fence”, “coast”, etc., the online version of WordNet 3.1 (see wordnet.princeton.edu for more information) was consulted to review hyponyms, meronyms, and sister terms in order to identify other

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spatially extended objects potentially fit for description with coextension paths. For the purpose of the present study the following four categories of landmarks were selected:

1. **Travelable paths**: “alley, artery, avenue, boulevard, bridge, flyover, footpath, highway, lane, motorway, overpass, passage, passageway, path, pathway, pavement, railway, road, roadway, route, street, subway, thoroughfare, track, trail, tunnel, underpass, viaduct, walkway, way”. These spatial entities are paths intended for traveling by people.

2. **Travelable environmental entities**: “beach, canyon, cliff, coast, coastline, crag, desert, escarpment, field, forest, glacier, glen, grassland, gulf, gully, hill, island, land, littoral, meadow, mountain, plateau, ravine, ridge, scarp, seashore, shore, valley, wasteland, wilderness”. These typically extended or elongated landmarks can also be traveled, however, they were not built intentionally for this purpose.

3. **Non-travelable connectors**: “cable, conduit, conveyor, duct, hose, line, pipe, pipeline, tube, wire”. These elongated objects, which are typically used for transmitting energy or transporting substances over long distance, are normally not traveled by people.

4. **Non-travelable barriers**: “barrage, barricade, barrier, dam, fence, hedge, hedgerow, palisade, rampart, wall”. These spatially extended entities typically serve as barriers and are not normally used for traveling, but they often stretch over a relatively substantial distance.

Altogether, 80 landmarks were selected for analysis, including 60 items for travelable paths and 20 items for non-travelable paths. This selection seems to be reasonably adequate for the purpose of investigating instrumentality in coextension paths. The range of objects that can be described with coextension path expressions is practically unlimited, thus enumerating all landmarks that can potentially feature in this context is impossible.

A selection of English motion verbs conflating instrument was taken from Levin, who labels them as **verbs of motion using a vehicle**. They express instrumentality by describing movement using a vehicle. They belong to two basic classes:

a) **Verbs that are not vehicle names**: “cruise, drive, fly, oar, paddle, pedal, ride, row, sail, tack”. Levin (Ch. 51.4.2) notes that these verbs are not directly derived from vehicle names, but some of them are zero-related to nouns that name parts used in propelling these vehicles.

b) **Verbs that are vehicle names**: “balloon, bicycle, bike, boat, bobsled, bus, cab, canoe, caravan, chariot, coach, cycle, dogsled, ferry, gondola, helicopter, jeep, jet, kayak, moped, motor, motorbike, motorcycle, parachute, punt, raft, rickshaw, rocket, skate, skateboard, ski, sled, sledge, sleigh, taxi, toboggan, tram, trolley, yacht” Levin (Ch. 51.4.1) notes that they are zero-related to nouns that are vehicle names and mean approximately “to go using the vehicle named by the noun”.

Altogether, 49 verbs of motion were selected for analysis. The list for verbs that are vehicle names is far from being exhaustive. It is impossible to enumerate all instrumental verbs of motion because, in principle, any vehicle name can be used as a verb of this type. Investigating which other motion verbs also conflate instrument in their semantics exceeds the scope of this research.

The search for instrumentality in coextension paths was implemented by looking for combinations of the above-listed landmarks with third-person singular simple present and past forms of the above-listed motion verbs, using the following pattern:

\[
\text{LANDMARK (noun sing.) + \hspace{1cm} INSTRUMENTAL MOTION VERB (3rd sing. present/past tense)}
\]

This pattern yields 7840 different variants for the selected landmarks, including 6240 combinations for the verbs that are vehicle names (80 landmarks x 78 verb forms), and 1600 combinations for the verbs that are not vehicle names (80 landmarks x 20 verb forms).

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3. Queries

This research is based on the BNC World edition published in 2001. The corpus was searched with SlopeQ, a part-of-speech-sensitive concordancer with support for proximity queries developed by Piotr Pęzik. The number of returned results was set to the maximum of 10000 (available via “Paging” option). All queries were implemented with the default value of 0 for SLOP factor\(^1\) (available via “Slop” option). The “Preserve order” option was set to “yes”. A vertical bar symbol ( | ) indicates logical “AND”. For example, the query “road runs|ran” substitutes for two separate queries “road runs” and “road ran”. The following queries were used:

**For coextensions paths including motion verbs that are vehicle names**

alley|artery|avenue|boulevard|bridge|flyover|footpath|highway|lane|motorway|overpass|passage|passageway|path|pathway
pavement|railway|road|roadway|route|street|subway|thoroughfare|track|trail|tunnel|underpass|viaduct|walkway|way|beach|canyon|cliff|coast|coastline|crag|desert|escarpment|field|forest|glacier|glen|grassland|gulf|gully|hill|island|land|littoral|meadow|mountain|plateau|ridge|scarp|seashore|shore|valley|wasteland|wilderness|cable|conduit|conveyor|duct|hose|line|pipe|pipeline|tube|wire|barrel|barricade|barrier|dam|fence|hedge|palisade|rampart|wall
balloons|ballooned|bicycles|bicycled|bikes|biked|boats|boated|bobsleds|bobsledded|buses|bused|cabs|cabbage|canyons|caravans|caravanned|chariots|charioted|coaches|coached|cycles|cycled|dogsleds|dogsledded|ferries|ferried|gondolas|gondolied|helicopters|helicoptered|jeeps|jeeped|jets|jeted|kayaks|kayaked|mopeds|mopedded|motors|motored|motorbikes|motorbiked|motorcycles|motorcycled|parachutes|parachuted|punts|punted|rafts|rafted|rickshaws|rickshawed|rockets|rocketed|skates|skated|skateboards|skateboarded|skis|skied|sleds|sledded|sledges|sledged|sleighs|sleighed|taxis|taxied|toboggans|tobogganed|trams|trammed|trolleyed|trolleyed|yachts|yachted

**For coextensions paths including motion verbs that are not vehicle names**

alley|artery|avenue|boulevard|bridge|flyover|footpath|highway|lane|motorway|overpass|passage|passageway|path|pathway
pavement|railway|road|roadway|route|street|subway|thoroughfare|track|trail|tunnel|underpass|viaduct|walkway|way|beach|canyon|cliff|coast|coastline|crag|desert|escarpment|field|forest|glacier|glen|grassland|gulf|gully|hill|island|land|littoral|meadow|mountain|plateau|ridge|scarp|seashore|shore|valley|wasteland|wilderness|cable|conduit|conveyor|duct|hose|line|pipe|pipeline|tube|wire|barrel|barricade|barrier|dam|fence|hedge|palisade|rampart|wall
cruises|cruised|drives|drove|flies|flew|oars|oared|paddles|paddled|pedals|pedaled|rides|rode|rows|rowed|sails|sailed|tacks|tacked

**For coextensions paths that depict the spatial entity of “road” with the verb “run”**

road runs|ran

Implementation of corpus queries based on regular expression syntax provides for immediate replicability of this research.

4. Concordances

A listing of concordance lines retrieved from the BNC with the above queries follows. Queries are presented on yellow background. Results recognized as valid representations of coextension paths are marked with green background. Results recognized as coincidental matches are marked with blue background.

1. the idea for which probably came to him during a passing involvement with cable trams, Holroyd Smith built three experimental miniature lines in Halifax during B09

2. On east boats in the 1870s, Lewis hands got a fixed wage of L7 to L10 for a B1N

3. In the transportation field, taxis and the most basic commodity of all, fuel, are based on unit cost prices. FEP

4. The Bugis’ prahus are a magnificent hybrid between the original island boats and the seventeenth-century Portuguese spice-trading galleons. FEP

5. Christina crawled behind one of the gaudily painted island buses for most of the journey, waving at several giggling little girls, their FR5

6. Island buses leave from Vassiliki three times a day, travelling to Levkas town and Nidri. G2B

7. BRITISH Channel Island Ferries offer big savings from October. CH1

8. British Channel Ferries are extending their minicruise excursions to September 12. CH5

9. that most of these islands were populated and we often caught glimpses of island ferries plying industriously between lonely rockbound piers. H0C

10. Beneath a sultry sky, at four o’clock, the island boats slipping past its flank, stirring with a casual Sunday crowd enjoying the A04

11. economies in defence spending with effects on British Aerospace and Westland Helicopters, changes in orders for power stations with effects on Northern G08

12. Where even going on the boat, we went from Glasgow from Quay in one of the Line boats and erm it cost erm the cheapest fares were twenty seven pounds ten return. GYW

13. said my guide, you’ve seen about the finest thing in corridors and new main line coaches, so come and have a look at our new Watford locals — the best locals, B2S

14. Now, Kathmandu has discovered mountain bikes. A3P

15. I quickly found that mountain bikes, don’t particularly spare you the bumps. A3P

16. Mountain bike operators: Himalayan Mountain Bikes, located in the courtyard of the Kathmandu Guest House, runs trips all A3P

17. and road bike features making it perfectly suited for people who like mountain bikes. A3P

18. Most of the people I went with took mountain bikes, and they envied me the Pioneer as I sped along with far less effort than A65

19. Mountain bikes are good. A6T

20. The Prince became fascinated and vanished from sight into the mountain bikes, and it was twenty-four minutes before anyone could extract him and move A7H

21. Guests have free use of the hotel’s bicycles available, and for those with an adventurous spirit and strong legs, Cycling: Mountain bikes, also available and a 50% reduction on green fees at the new 6 hole golf AMD

22. mountain bikes can be hired as well as ordinary bikes. AMD

23. A3P

24. and ordinary bikes can be hired in Saalbach. AMD

25. ANP

26. is one of the best ways of seeing and enjoying the countryside, and have proved to be the latest and most popular method of green transport: ANP

27. find themselves diving out of the way on paths, escaping from runaway mountain bikes, careering towards them on a mission to deposit their riders in a ditch. AS3

28. Part of the cause for derision is the accessories that go with mountain bikes. AS3

29. Like in the Trossachs, the mountains leave their marks but I did not meet any. B1N

30. The storms, and a useful test of the author’s PPL/I R — and two folding mountain bikes. BNV

31. We had bought Rudge Biframe folding mountain bikes specifically to go in the back of the 172, and trips to the Norfolk BNV
5 PEUGEOT CYCLES MOUNTAIN BIKES INCLUDING CYCLE HELMETS TO BE WIN PLUS 50 RUNNERS UP PRIZES OF £BNX

A grand draw with mountain bikes as the main prizes is also planned.

They also robbed two schoolboys of their £250 mountain bikes.

Off-road routes for mountain bikes on the Isle of Wight have been outlined in a new series of guides, Byways.

It is ironic that an article about mountain bikes

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No. | left context | result | right context | BNC
--- | --- | --- | --- | ---
14. museum building, with her back turned on the plateau along which the road cruised | road cruised | towards distant Silcaster, the shallow, silver-green bowl of the book-jacket | HBL
1. Mrs Field rode | Field rode | to hounds twice a week, and I had to prepare and lay out her clothes before | G39
2. Forest drives | Forest drives | and pony trekking are also available. | AS7
3. Enjoy the Forest Experience by taking one of the Hedge Rows | Hedge Rows | at Dalby or Newtondale. | B3K
4. Hambleton Ramblers, Stan Everington leads a ten-mile walk in field paths and open moors, Laskill pastures and Pockly Moor, meet Market | field paths and open moors, Laskill pastures and Pockly Moor, meet Market | K4P
5. The grubbing up of Hedge Rows is become general, and the Growth of Timber in them is therefore destroyed, | Hedge Rows is become general, and the Growth of Timber in them is therefore destroyed, | EER
6. for exporting Corn and Beer, which gives every Farmer encouragement to grub Hedge Rows up, and convert them into Corn Land. | Hedge Rows were succeeded by prim iron railings, and the village inn, once a pretty | FAG
7. Moss-grown cottages retired before new ones with bright red tiles, picturesque land cruises | land cruises | were succeeded by prim iron railings, and the village inn, once a pretty | AK6
8. 151 organises tours to less-visited islands, and will book Indonesian island cruises | island cruises | were succeeded by prim iron railings, and the village inn, once a pretty | A11
9. months with diesel and electric haulage, under the title Pullman Scenic | months with diesel and electric haulage, under the title Pullman Scenic | FAG
10. pounds to some coaches, and the trains were entitled North Wales Radio | North Wales Radio | were succeeded by prim iron railings, and the village inn, once a pretty | EEV
11. From then his family grazed cows on the land, rode motorbikes and stored goods there. | land, rode | were succeeded by prim iron railings, and the village inn, once a pretty | HXW
12. 1986 saw the sad end of the regular Fred Olsen | land, rode | were succeeded by prim iron railings, and the village inn, once a pretty | CA7
13. pressure for rapid development and reproductive maturation in the control line of the oldlines were compared, potentially leading to artefactual | pressure for rapid development and reproductive maturation in the control line of the oldlines were compared, potentially leading to artefactual | CRM
15. Iago Trekking Centre in Dyfed runs two-day L95 and three-day L135 trail rides in the remote foothills of the Welsh Cambrian Mountains. | two-day L95 and three-day L135 trail rides in the remote foothills of the Welsh Cambrian Mountains. | FBL
16. The White Horse Trekking Centre in Wiltshire runs two-day summer trail rides on Salisbury Plain and in the surrounding forests. | two-day summer trail rides on Salisbury Plain and in the surrounding forests. | FBL
17. Some, like the Castle Riding Centre Tel: 0546 3274tune their | two-day summer trail rides on Salisbury Plain and in the surrounding forests. | FBL
18. Similarly the Trans-Wales Trail Rides, based on Gymp Forest Riding Centre, Brecon Tel: 0874 713918include not only | two-day summer trail rides on Salisbury Plain and in the surrounding forests. | KS9
19. Either way trail rides | two-day summer trail rides on Salisbury Plain and in the surrounding forests. | KS9
20. But trail rides | two-day summer trail rides on Salisbury Plain and in the surrounding forests. | KS9
21. Trail rides: From around L250 for an extended weekend break four days to include | two-day summer trail rides on Salisbury Plain and in the surrounding forests. | KS9
22. N. You learnt wall rides there? | wall rides there? | | ARM
23. P. At South Bank I learnt wall rides, yeah. | wall rides, yeah. | | ARM
24. One man who had got himself clear in that way drove in his own carriage by the very commissioners to whom he had but lately | wall rides, yeah. | | BPH
25. Six years of bringing up Charlotte and Luke with chicken wire tacked across inside their bedroom window, and a security system worthy of Alcatraz | Six years of bringing up Charlotte and Luke with chicken wire tacked across inside their bedroom window, and a security system worthy of Alcatraz | CMJ
26. hired their own helicopter, landed in the local village, repossessed their wire it back in and re-erected it. | wire it back in and re-erected it. | | A6T

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For coextensions paths that depicting the spatial entity of "road" with the verb "run"

No. | left context | result | right context | BNC
--- | --- | --- | --- | ---
1. The road ran | straight across the desert for twenty miles. | AMU
2. The road ran | along the valley between them, where boulders had settled. | AT3
3. of Killiecrankie, about midway between Pitlochry and Blair Castle, where the road ran | along the valley between them, where boulders had settled. | BNB
4. The main Derby — Chesterfield road ran | along the other flank and this was fenced off with rabbit-proof wire netting and parallel to the shoreline. | BNY
5. The old coast road ran | along the other flank and this was fenced off with rabbit-proof wire netting and parallel to the shoreline. | CB6
7. That apart, Whitechapel Road and Mile End Road ran | between wide grass verges where two tethered cows and four goats grazed. | CBJ
8. From the Prince's headquarters a road ran | eastwards through Nivelles to meet the Charleroi highway at an unnamed | CMP
9. The road ran | through seemingly interminable pine forests with little to encourage us to stop | CRJ
10. The road ran | on into the desert alone, no longer accompanied by the railway line or the | FEM
11. The only traffic-bearing road ran | between the houses and the waterfront. | FPF
12. Beyond the pine trees the road ran, desolate and haunted black.

13. A small road ran across the bridge, through the fields and over a hill.

14. The road ran straight ahead of us until it disappeared in the mist, except that at the man's

15. The old road ran straight on along the gorge edge.

16. Round the bend ahead the road ran, fairly straight, a narrow ledge cut out of the mountainside.

17. Horderley would be hidden from view by the spur of hillside around which the road ran.

18. For the next twenty miles the road ran beside the restrained waters of the Danube.

19. The road ran straight on along the gorge edge.

20. Round the bend ahead the road ran fairly straight, a narrow ledge cut out of the mountainside.

21. The little towns through which the road runs may once have been important, but are now picturesque backwaters.

22. A road runs in front of the farm, its tracks worn deep into the ground.

23. Along this road runs the Wolverton and Stony Stratford Steam Tramway, the lines of which terminate

24. Another road runs south, through the oilfields, and is constantly being extended into virgin

25. A new road runs along the west coast, so the beaches are no longer deserted, and litter of all

26. A road runs the length of Spurn Head from the Observatory to the Point and soon the small

27. South from Arreau the main road runs along the wide valley of the Neste d'Aure to the resort town of

28. The road runs like a grey ribbon between verges full of tall grasses, cow-parsley and

29. Just because a road runs past a group of Bronze Age burial mounds does not mean that it is prehistoric.

30. Bridge Road runs into Medway Road and thus all traffic, in particular any heavy goods vehicles

31. From Schupfheim a spectacular minor road runs south for 17km 101 miles following the Forest Emme Waldemmeas this

32. We've simply walked across the Wolfwood and come out where another road runs through it, said Floy.

33. And I added, There's a minor road runs up over the cordillera via San Miguel and Lista to Hualgayoc where you can turn

34. This minor road runs parallel to the Union Canal which it crosses by a narrow humped back bridge.

35. One long straight road runs like a main vein down the arm of Grand Isle.

36. It is noteworthy that the line of the Great North Road runs near where many of these rivers ceased to be navigable, and many towns on the

37. After a while the road ran out and there was nothing in the bleak landscape but loose boulders, rocks, yaks

38. Then the road ran out altogether and the floor tilted sharply downwards beneath them.

39. Then, like hope, energy or money, the road runs out just when you need it.