

The Constraint Model

ULYSSES PROJECT · DIMENSION 13 · TYPE V, MODEL · THE PDF REGISTER

DIMENSION 13 · TYPE V, MODEL · THE UNIT: THE CONSTRAINT — a graph of eighteen places from the itinerary, a clock running from eight, two purses in pre-decimal coin, and the obligations of two men.

This is a toy model in the economist's sense. It takes from the itinerary (base document 03) a graph of eighteen named places, the hours 03 gives, two purses, four facts about Bloom's day and one fact about Stephen's, and it lets you route a figure through them against a running clock. It is not a claim about what anyone felt or intended. Its constraints are hard windows and detection events; the novel's are soft and interior. Where the model had to guess, the guess is printed on the line that uses it, marked [assumed], and listed in full below the instrument. You operate it; you do not read it.

Bloom starts with four shillings and ninepence, a funeral he must attend, an advertisement he must place, a house he cannot return to before four, and one man he must not meet. Stephen starts with nothing in his pocket until Dalkey pays him, no obligation at all, and no key. The clock runs from eight in the morning to a quarter to three the next morning, where 03 stops. Nothing you do ends the day early except going home; the day cannot be won, only failed informatively.

And a PDF cannot be operated. The instrument this document describes is a thing you press keys at: it has a clock that moves, a purse that empties, a ledger that fills as you go, and results that exist only because you produced them. None of that survives a printed page. So this document does not pretend to be the instrument. It sets out the model's structure — every place, every edge, every window, every assumption, every table the instrument runs on — and it sets out what the instrument computes and reports. The operable version lives at hulkiokantabak.github.io/ulysses/dimensions/constraint-model/, and this document is its record, not its substitute.

n = 1, and it is stated here rather than footnoted (anchor A10). Every place, hour and route in this model comes from base document 03, the itinerary — the project's reconstruction of place and hour across 16–17 June 1904, made inside one accompanied first cover-to-cover read of *Ulysses*. The model reaches the reading record only through 03; it does not draw on it directly. Nothing here generalises, and nothing here is an assertion about the novel's inner life: this is a toy model in the economist's sense, its constraints hard and exterior where the novel's are soft and interior. The assumptions and the refusals at the end are part of the document, not an apology appended to it.

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This is the PDF register of dimension 13 – one of three registers the dimension budgets (HTML, PDF, diagram; the presentation register is deliberately skipped). Its companion HTML edition, which is the operable instrument itself, is at hulkiokantabak.github.io/ulysses/dimensions/constraint-model/. The itinerary this model is built from is published at hulkiokantabak.github.io/ulysses/reference/day/.

The instrument, and where it can be operated

The instrument opens on a single deep plate: a clock, a purse, a row of constraint chips, a list of places reachable from where you stand, and a ledger that records every move you make and tags it by the printed rule. There is no map and no picture of anything — adjacency is the only geography. You start as Bloom in the basement kitchen at 7 Eccles Street; the key S hands you Stephen on the gun-platform of the Martello Tower. Both start at eight in the morning.

The opening lines of each figure's ledger state the terms of the day:

"It is eight in the morning. You have four shillings and ninepence and four facts on the instrument row. Press 1, or ↑↓ and Enter."

the ledger, first line, Bloom · 16 June · 08:00 · the basement kitchen, 7 Eccles Street [03 §4]

"It is eight in the morning. You have no obligation at all, nothing in your pocket until Dalkey pays you at ten, and no key — you paid the rent; Mulligan holds it. Press 1."

the ledger, first line, Stephen · 16 June · 08:00 · the gun-platform of the Martello Tower, Sandycove [03 §1]

The controls

Reproduced from the instrument's own key list, which is printed on the plate rather than hidden behind a help screen:

keys — **1–9** go · **↑↓/j** k choose · **Enter** go · **W** or **.** wait 15 min · **S** switch figure · **Shift+J** the book's day, same classifier · **M** a thousand random days · **R** reset · **A** assumptions · **?** this list

The classifier, printed on the plate

Every move you make is tagged by one mechanical rule, and the same rule is applied to the book's own day and to the thousand random days. This is the legend as the instrument prints it:

"the classifier, applied to every move including the book's own — TOWARD: the destination hosts an open or upcoming unmet obligation. AWAY: no obligation is targeted, and the move leaves a place with an active documented hazard or increases graph distance from the nearest one. DRIFT: neither. Waits are drift. A crossing: same place as the documented track with overlapping minutes; the second count adds one-edge-away within ten minutes. Stephen's three-till-ten gap is never counted, and after ten the record has the two in company — company is not a crossing. The meeting is tallied apart."

the legend beneath the ledger, model.html

The two refusals

Two moves the instrument will not perform. They are the dimension's centre, and the instrument states them in the same words each time:

"7 Eccles Street — refused. You cannot. The model does not say why. The novel does. [the door opens at four — assumption 7]"

the ledger, on any attempt to go home between 09:30 and 16:00

“the Tower — refused. No key; Mulligan holds it. You cannot. The model does not say why. The novel does. [03 §1]”

the ledger, on any attempt to return to the Martello Tower after leaving it

The Tower stays on Stephen's list of places all day, and refuses him every time it is chosen; the count of refusals is reported back to him at the end of the day.

Why this document is not the instrument

The clock, the purse, the ledger, the end card, the replay and the thousand days are computed at the moment they are asked for. A printed page can hold their structure and their rules; it cannot hold their output, and this document does not invent any. Where a result depends on what you did, this document says what the instrument would report and leaves the number where it belongs — in the instrument, at hulkiokantabak.github.io/ulysses/dimensions/constraint-model/. This is the record of the model, not a substitute for operating it.

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The modelling assumptions, in full

Everything below is a modelling choice, printed here in the document flow, not behind a keystroke. Anything not covered by these sixteen lines comes from 03, and the line that uses it says which section.

The list is reproduced entire and unaltered from the artifact. It runs to seventeen numbered lines, where the sentence above it — the artifact's own — and the dimension's record in `data/dimensions.json` both say sixteen. The count is left as the source has it rather than quietly corrected (anchor A4); the engine's own inline references keep the sixteen-line count, so from the fifteenth line on they run one ahead of the numbering printed here.

1. Walking pace 5 km/h applied to the distances 03 states; tram and train about $2\frac{1}{2}\times$ foot, the funeral carriage about $2\times$. The multipliers are assumed.
2. Edges exist only where 03 describes a traversal. Where 03 states no distance, the duration is interpolated from relative position and bounded by 03's consecutive-episode clock gaps; every such edge is marked [assumed] on its row and in the edge table.
3. One composed leg: 03 is silent on Bloom between six and eight in the evening. The model sends the documented car south-east from Little Britain Street and waits on the strand. The ledger flags it.
4. The clock is quantized to 5-minute display and 15-minute waits, because 03's own warning is that hours are firm and minutes approximate. Every minute shown here is a rounding.
5. The funeral counts as attended if the figure is at Newbridge Avenue between 10:30 and 11:00, or at Glasnevin between 11:00 and 11:45. Both bounds are assumed; 03 fixes the hours, not the attendance rule — and a dawn visit to the cemetery is not the funeral.
6. The advertisement counts as attempted on a visit to the Freeman's Journal office between 10:00 and 18:00. The office hours are assumed; 03 fixes only the noon visit — and in 03 the renewal is never settled, so the chip says *attempted*, never *placed*.
7. The home lockout is a hard wall from 09:30 (the morning's last departure) to 16:00. The novel's constraint is psychological, not physical. And the key is in the other trousers all day (03 §17), so every return is over the railings.
8. The Boylan hazard is his documented sightings only, each active ± 30 minutes: the Molesworth-Street sighting $\sim 13:50$ (03 §8) placed on the Grafton-Duke node and the fruit shop $\sim 15:00$ (03 §10 gives no address) likewise placed there — both placements assumed; the Ormond bar just before 16:00 (03 §11); the front door of Eccles Street at 16:00 (03 §4). His departure from Eccles Street is unstated and is modelled as evening — active to 20:00. No diffuse risk is invented between sightings.
9. Stephen's £3 12s is credited at Dalkey at 10:00, where 03 places Deasy's payment. The dimension specification credits it at the day's start; the model follows 03 and says so.
10. Stephen's gap runs 15:00–22:00 — seven hours, per 03's own sentence. During it his position is unknown, co-presence is indeterminate, and nothing is counted. The Wandering Rocks fragment at three has no address in 03 and is likewise uncounted. Both choices are conservative: they can only lower the crossing counts.
11. A crossing is: same place with overlapping minutes. The second, wider count adds: one edge away within ten minutes. Both are always printed side by side. The 22:00 meeting at Holles Street is tallied apart from both.
12. Spending amounts are placeholders — kidney 3d, soap 4d, lunch 7d, dinner 1s 6d, crubeen 4d, coffee and bun 4d — each marked [assumed] on its ledger line. Bloom's opening four and nine is the dimension's own figure; 03's one money glimpse of him (“eightpence,” Grafton Street,

§8) is looser and is not modelled. The real economy of the day is dimension 4's ground, not this model's.

13. Stephen's purse drains 72 pence an hour from receipt — a calibration to two sentences in 03 (“most of it will be gone by midnight”; at Burke's, “by the end of the hour it is gone”), not a claim about who bought what. The drain is flat; the model does not know who is drinking. The flat rate empties the purse about an hour before 03's Burke's sentence does — the calibration is deliberately blunt.
14. The thousand-day policy is uniform over legal moves and the 15-minute wait, except one step along a shortest path when an obligation would otherwise become unreachable. The walker keeps Bloom's constraints, knows nothing of Stephen, and stays out until two, as the book's day does — with one crack: when every other exit from a dead end is closed, the forced step may pass through Eccles Street, which the walker otherwise avoids.
15. The classifier is mechanical and identical for your day, the random days, and the book's: TOWARD — destination hosts an open or upcoming unmet obligation. AWAY — no obligation targeted, and the move departs an active documented hazard or increases graph distance from the nearest one. DRIFT — neither. Waits are drift.
16. Co-presence with a documented Boylan sighting is detected at node resolution. The book can put two men in one building and keep them apart in it; this model cannot see rooms. Where that overstates, the line says so.
17. Constraints here are hard and exterior; the novel's are soft and interior. That gap is the definition of a toy, and the model would rather show it than hide it.

The eighteen places

The tables in this and the following sections are the same constants the instrument runs on — there is one copy of the data, and this is it. Provenance is per entry: [03] where the itinerary states the thing or its clock gaps bound it, [assumed] where a listed assumption produced the number. The section numbers in the source column are 03's episode numbers; where an episode is named anywhere in this document, the name is scaffolding and not Joyce's — he printed no episode titles (anchor A2). 03's own conventions travel with the data: only presence in the flesh enters this graph, and recalled or hallucinated presence is not presence here (anchor A3).

place	source
the Martello Tower, Sandycove	03 §1 · ~13 km south-east of the city
Mr Deasy's school, Dalkey	03 §2 · end of the tram and train line
Sandymount Strand	03 §3/§13 · ~5 km from the centre
7 Eccles Street	03 §4/§17 · ~1.5 km from the centre
Dlugacz's, Upper Dorset Street	03 §4
Sir John Rogerson's Quay	03 §5
the Westland Row quarter	03 §5/§14 · post office, church, chemist, station
Newbridge Avenue, Sandymount	03 §6 · Dignam's house
Glasnevin Cemetery	03 §6
the Freeman's Journal, Prince's Street	03 §7 · behind the GPO
O'Connell Bridge / Sackville Street	03 §7/§8 · the exact centre
Grafton–Duke Street	03 §8 · the Burton, Davy Byrne's
Kildare Street – Museum and Library	03 §8/§9
the Ormond Hotel, Upper Ormond Quay	03 §11
Barney Kiernan's, Little Britain Street	03 §12
Holles Street hospital (and Burke's)	03 §14 · Burke's is the corner pub, folded in
Nighttown – Mabbot Street	03 §15 · a few hundred metres from the GPO
the cabman's shelter, Butt Bridge	03 §16

Eighteen places, and the whole geography of the model. The city itself — its streets, its distances, its look — is published separately, under [Reference: the city](#); none of it enters here.

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The edges

An edge exists only where 03 describes a traversal, and all edges run both ways. The provenance column is the whole of anchor A5 in this dimension: [03] where the itinerary states the distance or its episode clock gaps bound the time, [assumed] where assumptions 1–3 produced the number.

edge	min	mode	provenance	note
the Martello Tower, Sandycove ↔ Mr Deasy's school, Dalkey	25	foot	[assumed]	03 §1–2: adjacent villages on the same line; pace applied
Mr Deasy's school, Dalkey ↔ Sandymount Strand	15	train	[03]	03 §3: in from Dalkey by train; bounded by the 10:45→11:00 gap
Sandymount Strand ↔ the Westland Row quarter	45	foot	[assumed]	03 §3: the strand ~5 km out; pace applied
Sandymount Strand ↔ Newbridge Avenue, Sandymount	10	foot	[assumed]	03 §6/§13: both in Sandymount; adjacent
Newbridge Avenue, Sandymount ↔ the Westland Row quarter	15	tram	[03]	bounded by the 10:45 close → 11:00 open gap, 03 §5–6
Newbridge Avenue, Sandymount ↔ Glasnevin Cemetery	45	car	[03]	the funeral traverse of the whole city, 11:00 → ~11:45, 03 §6
Glasnevin Cemetery ↔ 7 Eccles Street	30	foot	[assumed]	03 §6: the cortege route passes Phibsborough, near Eccles St
Glasnevin Cemetery ↔ the Freeman's Journal, Prince's Street	20	tram	[03]	bounded by the ~12:00 close → 12:00 open seam, 03 §6–7; minutes approximate
7 Eccles Street ↔ Dlugacz's, Upper Dorset Street	5	foot	[03]	03 §4: out the front door to the butcher and back
7 Eccles Street ↔ O'Connell Bridge / Sackville Street	20	foot	[03]	03 §4: ~1.5 km from the centre; pace applied
7 Eccles Street ↔ the Ormond Hotel, Upper Ormond Quay	30	foot	[03]	03 §11: a mile and a half apart; pace applied
O'Connell Bridge / Sackville Street ↔ Sir John Rogerson's Quay	15	foot	[assumed]	down the south quays
O'Connell Bridge / Sackville Street ↔ the Freeman's Journal, Prince's Street	5	foot	[03]	03 §7: Prince's Street immediately behind the GPO
O'Connell Bridge / Sackville Street ↔ Grafton–Duke Street	10	foot	[03]	03 §8: Westmoreland Street → Grafton Street
O'Connell Bridge / Sackville Street ↔ the Ormond Hotel, Upper Ormond Quay	10	foot	[assumed]	along the quays to Upper Ormond Quay
O'Connell Bridge / Sackville Street ↔ Nighttown – Mabbot Street	10	foot	[03]	03 §15: Monto a few hundred metres from the GPO
O'Connell Bridge / Sackville Street ↔ the cabman's shelter, Butt Bridge	10	foot	[assumed]	O'Connell Bridge down-river to Butt Bridge
Sir John Rogerson's Quay ↔ the Westland Row quarter	10	foot	[03]	03 §5: Lime Street → Townsend Street → Westland Row
the Westland Row quarter ↔ Kildare Street – Museum and Library	10	foot	[assumed]	Lincoln Place to Kildare Street, one quarter
the Westland Row quarter ↔ Holles Street hospital (and Burke's)	10	foot	[03]	03 §14: Holles Street by Merrion Square; the party walks it
the Westland Row quarter ↔ Nighttown – Mabbot Street	20	train	[assumed]	mode (train) from 03 §14–15; minutes interpolated, bounded only by the 23:00→24:00 gap

edge	min	mode	provenance	note
Grafton–Duke Street ↔ Kildare Street – Museum and Library	10	foot	[03]	03 §8: Duke → Dawson → Molesworth → Kildare
Grafton–Duke Street ↔ the Westland Row quarter	10	foot	[assumed]	around Trinity, one quarter
Kildare Street – Museum and Library ↔ the Ormond Hotel, Upper Ormond Quay	15	foot	[assumed]	Kildare Street to the north quays; relative position
Kildare Street – Museum and Library ↔ Holles Street hospital (and Burke's)	15	foot	[assumed]	past Merrion Square
the Ormond Hotel, Upper Ormond Quay ↔ Barney Kiernan's, Little Britain Street	10	foot	[assumed]	Upper Ormond Quay up to Little Britain Street
the Freeman's Journal, Prince's Street ↔ Barney Kiernan's, Little Britain Street	10	foot	[assumed]	behind the GPO to the markets quarter
the Freeman's Journal, Prince's Street ↔ Nighttown – Mabbot Street	10	foot	[03]	03 §15: a few hundred metres from the GPO
Barney Kiernan's, Little Britain Street ↔ Sandymount Strand	30	car	[assumed]	assumption 3: 03 silent between six and eight; the documented car, sent south-east
Sandymount Strand ↔ Holles Street hospital (and Burke's)	45	foot	[assumed]	03 §13-14: ~5 km out to the south-east edge; bounded by the 21:00→22:00 gap
Nighttown – Mabbot Street ↔ the cabman's shelter, Butt Bridge	15	foot	[03]	03 §16: Beaver St → Amiens St → Store St → Butt Bridge
the cabman's shelter, Butt Bridge ↔ 7 Eccles Street	25	foot	[03]	03 §17: Beresford Pl → Gardiner → Mountjoy Sq → Temple St → Hardwicke → Berkeley Rd; bounded 02:00→02:45

Thirty-two edges. Where an edge is absent, the instrument says so on the row it would have occupied — no way there [no edge in 03] — rather than inventing a street.

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The constants the instrument runs on

The clock, the two purses, and the four windows that make Bloom's day a set of obligations. Minutes inside the engine are counted from midnight on 16 June; they are given here as the instrument displays them.

constant	value	where it comes from
the clock	08:00 on 16 June to 02:45 on 17 June	03 · the model stops where 03's record ends; the book's Bloom is at his own railings at 02:00 (03 \$17)
Bloom's purse	4s 9d — 57 pence	the dimension's own figure; 03 \$8's “eightpence” at Grafton Street is looser and unmodelled [assumption 12]
Stephen's purse	£3 12s — 864 pence	03 \$2, Deasy's payment, credited at Dalkey at 10:00 [assumption 9]
Stephen's drain	72 pence an hour from receipt	calibrated to two sentences in 03 [assumption 13]
the funeral	Newbridge Avenue 10:30–11:00, or Glasnevin 11:00–11:45	03 \$6 fixes the hours; the attendance rule is assumed [assumption 5]
the advertisement	the Freeman's office, 10:00–18:00	03 \$7 fixes the noon visit; the office hours are assumed [assumption 6]
the lockout	09:30–16:00, a hard wall	the novel's constraint is psychological, not physical [assumption 7]
the wait	15 minutes, classified DRIFT by rule	the clock is quantized because 03's hours are firm and its minutes approximate [assumption 4]

The placeholder spends

Bloom's purse empties by six placeholder amounts, each marked [assumed] on the ledger line that takes it. Stephen has no itemised spending at all — his purse runs down by the flat hourly drain instead, because the model does not know who is drinking.

place	amount	window	the ledger line
Dlugacz's, Upper Dorset Street	3d	08:00–18:00	the butcher takes 3d
the Westland Row quarter	4d	09:00–18:00	the chemist takes 4d — soap
Grafton–Duke Street	7d	12:00–15:00	Davy Byrne's takes 7d
the Ormond Hotel, Upper Ormond Quay	1s 6d	15:00–19:00	the dining room takes 1s 6d
Nighttown — Mabbot Street	4d	00:00–02:00	the crubeen takes 4d
the cabman's shelter, Butt Bridge	4d	00:00–02:45	coffee and a bun, 4d

Stephen's documented day

The timetable the model plays against. Stephen is never pathed and never simulated when Bloom is the figure you hold: he is only what 03 states, plus the gap 03 itself declares. The seven-hour hole in the middle is the model's most consequential silence, and it is never counted in either direction.

hours	place	source
08:00–08:45	the Martello Tower, Sandycove	03 §1 · 8:00–8:45
09:45–10:45	Mr Deasy's school, Dalkey	03 §2 · ~9:45–10:45
11:00–11:45	Sandymount Strand	03 §3 · ~11:00–11:45
12:00–13:00	the Freeman's Journal, Prince's Street	03 §7 · noon–1:00, arriving with Deasy's letter
14:00–15:00	Kildare Street — Museum and Library	03 §9 · 2:00–3:00, the Library
15:00–22:00	OFF THE RECORD	03 · 'vanishes for seven hours' — from three till ten; excluded from every count
22:00–23:00	Holles Street hospital (and Burke's) · the meeting — tallied apart	03 §14 · 10:00–11:00 — they finally meet
23:00–23:15	the Westland Row quarter · in company with Bloom per 03 — uncounted	03 §14 · scattering toward the Westland Row train
00:00–01:00	Nighttown — Mabbot Street · in company with Bloom per 03 — uncounted	03 §15 · midnight–1:00
01:00–02:00	the cabman's shelter, Butt Bridge · in company with Bloom per 03 — uncounted	03 §16 · 1:00–2:00
02:00–02:45	7 Eccles Street · cohabitation, not a near-miss — uncounted	03 §17 · 2:00–2:45, let in the back; leaves — where is never said

Only the five windows before the gap can ever be counted as crossings. Everything after ten o'clock is company, and company is not a crossing.

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Boylan’s documented sightings, the hazard track

The one man Bloom must not meet is not a character in this model. He is four documented sightings, each made active for thirty minutes on either side of its stated hour, and the model invents no diffuse risk between them. The first row is not a node at all: it is a sighting from a moving carriage, below the model's resolution, printed as a note and never counted.

documented	place	active window	source
~11:30	the pavement, from the funeral carriage	—	03 §6 · a route, not a node; printed as a note, never counted
~13:50	Grafton-Duke Street	13:20–14:20	03 §8 · seen ahead near Molesworth Street; the museum bolt; placed on the Grafton-Duke node [assumed]
~15:00	Grafton-Duke Street	14:30–15:30	03 §10 · the fruit shop; no address in 03 — placed on Grafton St [assumed]
~15:55	the Ormond Hotel, Upper Ormond Quay	15:25–16:25	03 §11 · in the Ormond bar just before four
16:00	7 Eccles Street	16:00–20:00	03 §4 · in at the front door at four; departure unstated — active to 20:00 [assumed]

Approaching a node inside an active window stops the instrument and asks a question before the move is made — continue, or go round. Going round costs no time and is recorded as a choice. Being in the house at Eccles Street during the documented window is the one event the model names outright:

“BOYLAN: MET. You are in the house during the documented window. The book was not.”

the ledger · 03 §4; node resolution — assumption 16 as printed here

The book's own day, the route the replay is fed

The instrument's Shift+J replay runs the book's documented route through the identical engine — the same classifier, the same counters, the same refusals — and prints the result as a ledger and an end card. Nothing about it is scripted output. The route it is fed is below: departure hours taken straight from 03's episode opens and closes, with dwell time whatever the edge sums leave over.

departs	for	03's note
08:05	Dlugacz's, Upper Dorset Street	03 §4 · the kidney
08:15	7 Eccles Street	03 §4 · back along Dorset Street
09:05	O'Connell Bridge / Sackville Street	03 §4-5 · out for the morning
09:25	Sir John Rogerson's Quay	03 §5 · opens ~9:45 on the quay
10:00	the Westland Row quarter	03 §5 · the letter, the church, the chemist
10:45	Newbridge Avenue, Sandymount	03 §6 · the funeral leaves at 11:00
11:00	Glasnevin Cemetery	03 §6 · the traverse; Boylan on the pavement ~11:30, below this model's resolution
12:00	the Freeman's Journal, Prince's Street	03 §7 · the Keyes ad at noon
13:00	O'Connell Bridge / Sackville Street	03 §8 · crossing south at ~1:00
13:05	Grafton-Duke Street	03 §8 · lunch at Davy Byrne's
13:50	Kildare Street — Museum and Library	03 §8 · sees Boylan ahead; bolts through the museum gates
15:30	the Ormond Hotel, Upper Ormond Quay	03 §10-11 · a bookcart on the way (03 gives it no address); the Ormond ~3:55
17:00	Barney Kiernan's, Little Britain Street	03 §12 · Barney Kiernan's
18:00	Sandymount Strand	03 §12-13 · driven off by car; 03 silent till eight [assumption 3]
21:15	Holles Street hospital (and Burke's)	03 §14 · the hospital by ten
23:00	the Westland Row quarter	03 §14 · toward the last train
23:40	Nighttown — Mabbot Street	03 §15 · midnight
01:00	the cabman's shelter, Butt Bridge	03 §16 · the shelter at ~1:00
02:00	7 Eccles Street	03 §17 · home at two, no key, over the railings

The last line is the one the end card writes out in full when a day ends at home:

“No key — it is in the other trousers. You climb the area railings and drop five feet nine and a half inches into the area, and enter your own house through the back. [03 §17]”

the end card · the arrival at 7 Eccles Street

03’s near-misses, the validation target

This is 03's own table of the day's near-misses, reproduced entire. It is the model's validation target: the replay must reproduce it or say exactly where and why it cannot, and the instrument prints its verdict row by row beside these five lines. The fourth row names an episode — that name is scaffolding, not Joyce's; he printed no episode titles (anchor A2).

hour	place	what happens
~11:30 a.m.	Irishtown, from the funeral carriage	Simon sees Stephen through the window; Bloom looks
12 noon	The Freeman's Journal	Both in the building. No meeting
~3 p.m.	The National Library porch	Bloom passes between Stephen and Mulligan
~3 p.m.	Wandering Rocks	Both crossing the same small city
10 p.m.	Holles Street hospital	They finally meet

Two of the five can never be reproduced at this resolution, and the model says so rather than fudging them. The carriage sighting happens mid-traverse, on a route rather than at a node, and is reachable only at the adjacency threshold — the cortege leaves Newbridge Avenue at eleven, one edge from the strand. The fourth row has no address in 03 at all; the counter is blind to it, and its own words for that are: not reproducible – 03 gives it no address; the model counts it as nothing, and says so.

What the model computes, and what it reports

Three outputs, and none of them can be printed in advance: the end card for the day you operated, the replay of the book's day through the identical classifier, and a thousand random legal Bloom-days measured against Stephen's fixed documented track. What follows is what each of them reports, and the lines each prints unconditionally — the numbers stay in the instrument.

The end card

At the end of an operated Bloom day the instrument states the funeral's status, the advertisement's status, the Boylan tally, how many times the locked door refused you, what is left of four and nine, the crossings of Stephen's documented track at both counts, whether the ten o'clock meeting was made, and the whole day's classifier totals — TOWARD, AWAY, DRIFT, and the count of decisions. It then isolates the hours between one and eight, when the hazard track is live, and reports how many of the decisions taken in them were moves away from a documented hazard.

Two of its lines are printed whatever you did. The first arrives the moment both errands are resolved, and it is the dimension's finding stated by the instrument itself:

"both errands are resolved. The list still renders; nothing in it is required any more. What stays active is what must be avoided."

the ledger · on the exhaustion of the funeral and the advertisement

"The classifier files the entire evening as drift. The novel files those hours as the point. That disagreement is a fact about the classifier, and the model prints it rather than hiding it."

the end card · printed on every Bloom day

The Stephen end card reports the classifier totals, what the flat drain left of £3 12s, how many times the Tower refused him, and his crossings of Bloom's documented track. Its closing line is likewise unconditional:

"A ledger with no gradient is what this day looks like from inside the rule. The key that would have given it one was handed over before the model started. [03 §1: Stephen pays the rent; Mulligan holds the key]"

the end card · printed on every Stephen day

The thousand days

The Monte Carlo run states its own terms before it prints anything:

"1,000 random legal Bloom-days against Stephen's fixed documented track — his five pre-gap windows, the only hours a crossing can be counted. The walker keeps the funeral, the advertisement and the lockout; it knows nothing of Stephen and stays out till two. Uniform choice over legal moves, plus the one-step deadline pull."

the thousand days (M) · assumption 14

It then prints two histograms — same-place crossings per day, and crossings within one edge and ten minutes — with the book's own day marked on each, and the share of random days that happened to be at Holles Street in the meeting hour. Depending on what the thousand days come out at, it closes with one of exactly three verdicts, which are the model's whole argument in its three possible forms: that even the same-place crossing is not the rare event and zero is the tail; that at

street scale the crossing is the expected outcome of these errands while in the same place at the same minutes chance thins out, so that the structure supplies the neighbourhood and the book supplies the room; or that in that run most random days made no crossing at either count and the structure alone did not force the book's day. A printed document cannot say which of the three a given run will print, and this one does not.

What it does print in every run is the reminder that the bars are floors, not estimates:

“Every count excludes Stephen's three-till-ten gap, and the fourth row of 03's table — ‘both crossing the same small city’ at three — has no address in 03 and is invisible to this counter. Both exclusions can only lower these bars.”

the thousand days (M) · printed on every run

The dimension's own claim

The finding this dimension was built to test is recorded, in the project's dimension register, in these words:

“Operated as a routing-and-avoidance problem, the day's shape is structural rather than arranged. Bloom's constraints are mostly about where he must not be; Stephen's single missing key compounds hour by hour; and the near-misses need no novelist to arrange them.”

data/dimensions.json · dimension 13, the claim

“Run the day yourself and nearly every Bloom decision is a decision not to be somewhere; run a thousand random days through the same graph and they cross the documented track again and again — the book's most-praised coincidences sit inside the expected range of two men with overlapping errands in a small city. A toy model in the economist's sense: it claims nothing about what anyone felt or intended, and says so in its own voice.”

data/dimensions.json · dimension 13, what it shows

That is the claim the instrument exists to be checked against, by operating it at hulkiokantabak.github.io/ulysses/dimensions/constraint-model/.

What the model refuses

The artifact's closing statement, reproduced in full:

No map, no streets, no picture of anything: adjacency is the only geography here, because representation is another project's ground and not this one's. No character beyond the two figures and a hazard track: Stephen is a timetable, Boylan is four sightings. And the person who travels furthest in the book does not appear in the model at all — the episode with no hour and no movement has no place in a routing problem. That absence is a confession about what kind of thing this is, and it is the most accurate line in it.

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Caveats — every way this can mislead

SOURCE — base document 03, the itinerary of place and hour, published at [Reference: the day](#), is the sole data source of this dimension. Sourced and inferred are separated on every row by [03] and [assumed] (anchor A5); contradictions are shown, not resolved (A4); $n = 1$ is stated in the document's own voice (A10). The model's chain to the reading record runs through 03 and not directly, so no reader quotation appears in this dimension — where the reader's own words are the material, they are reproduced as spoken, dictation slips included (A6), and that is [dimension 11](#)'s ground rather than this one's.

The gap that defines a toy. The dimension states its own confidence in these terms: a toy model, constraints here hard and exterior where the novel's are soft and interior — the gap is the definition of a toy, shown rather than hidden; and where 03 states no distance or time, the interpolation is marked [assumed] on the line that uses it.

The model cannot see rooms. Co-presence is detected at node resolution. The book can put two men in one building and keep them apart in it; this model cannot. Where that overstates a meeting, the line that reports it says so.

Every minute shown is a rounding. The clock is quantized to five-minute display and fifteen-minute waits, because 03's own warning is that hours are firm and minutes approximate.

Two silences are counted as nothing, deliberately. Stephen's seven hours off the record, three till ten, and 03's silence on Bloom between six and eight are excluded from every count. So is the near-miss 03 gives no address for. All three exclusions are conservative: they can only lower the crossing counts, never raise them.

Money here is not the day's economy. Every spend is a placeholder amount, and Bloom's opening four and nine is the dimension's own figure rather than 03's; Stephen's purse drains at a flat rate calibrated deliberately bluntly to two sentences. The real economy of the day is [dimension 4](#)'s ground.

Episode titles are scaffolding. Wherever an episode is named in this document — in 03's near-miss table, in the assumptions — the name is a convenience of the project's schema and not Joyce's: he printed no episode titles (anchor A2).

The count of the assumptions disagrees with itself. The artifact's own sentence and the dimension's record both say sixteen modelling assumptions; the list as printed runs to seventeen numbered lines, and the engine's inline references follow the sixteen-line count. Both are reproduced here unaltered rather than reconciled (A4).

And this document is not the instrument. A PDF cannot be operated. Every result this model produces is produced at the moment it is asked for, and none of them is printed here. The operable version is at hulkiokantabak.github.io/ulysses/dimensions/constraint-model/; the itinerary it is built from, in both its reading and interactive forms, is at [Reference: the day and its interactive edition](#); the whole reading record the project descends from is [the Reading Companion](#), published also as [the full 117-page PDF](#). The other documents in this register sit together at hulkiokantabak.github.io/ulysses/registers/documents/.

A first reading, documented as it happened

A website built out of one first cover-to-cover reading of James Joyce's *Ulysses*: the reading record as the spine, analytic dimensions organised by type of operation rather than by subject, four output registers, and the project's own error log published beside its work.

hulkiokantabak.github.io/ulysses

Hulki Okan Tabak, with Claude. The 1922 text of *Ulysses* is in the public domain; the model's every place, hour and route derives from base document 03, the itinerary. Set in DejaVu Serif and DejaVu Sans Mono, embedded under the Bitstream Vera licence. The operable instrument this document records is at hulkiokantabak.github.io/ulysses/dimensions/constraint-model/. Build status, corrections and the project's catches log are published at hulkiokantabak.github.io/ulysses/method/log/.