Applying Search Tactics

Image: BSAR (Brush Search And Rescue Victoria) searchers on Mt. Dom Dom
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Unit 20: Applying Search Tactics
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Search Crucials

- **Search is an Emergency**
- **Search is a classic mystery**
- **Search for clues not just the subject**
- **Know if the subject leaves the search area**
- **Close grid search as a last resort**
- Manage by objectives
- Search management is information management

Tactics bring us right back to the search crucials.

It is an emergency, so we want to use efficient tactics early on.

It is a classic mystery – we are searching for clues.

Containment is a tactic to know if the subject has left the search area.

Most of the time, close grid search isn't a tactic to use early on.

Tactics

- Direct/Active

  Go find the subject.
  - Type I to Type IV search (human, canine, equine)
  - Aerial search

- Indirect/(Passive)

  Make the subject come to you.
  - Investigation
  - Containment
  - Attraction
    - Sound
    - Lights
  - "Limited Continuing Search"

We can divide tactics into two categories:

Direct: We go and find the Subject.

Indirect: We make the subject come to us.

We usually think of search as the direct tactics, but you might be tasked with containment or attraction assignments

Attraction

- Lookouts/Road blocks with lights/siren
    - Attractor shouldn't move.
- Places with a view:
    - High points
    - Scenic views
    - Fire towers
    - Fire Department aerial platform.

General principle of attraction: The attractor doesn't move.

Great stories of missing people walking towards vehicle sirens and PA systems, then have them move somewhere else, walking towards the new source of the sounds, then...

Lost person behavior profile will suggest whether attractors making noise or lights are likely tactics.

Also: High points make great vantages for observing the search area.

Fire department aerial apparatus (particularly aerial platforms) can make excellent movable high points.

Loud, bright flashing lights.

What lost person behavioral categories might this be a very good attractor for?

Containment

- Road/Trail blocks
- Road patrols
- Track Traps (existing or constructed)
- Perimeter Sign Cutting
- Lookouts (binoculars, thermal imaging)
- Camp-ins

Multiple tactics can be used to establish containment.

Sound Sweep

- Stop
- Pause and listen
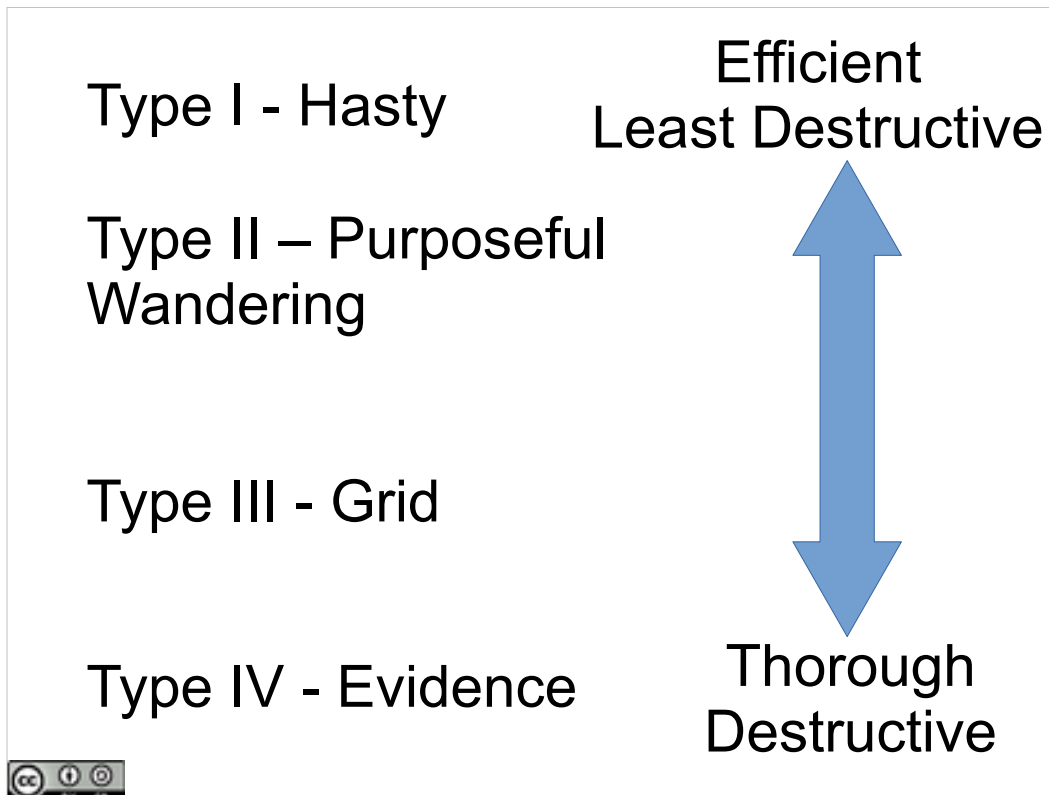- Call Subject's name (or whistle)
- Wait and **listen**
- Continue

As an attractor, you can make noise and listen.

While performing a search, you can also perform a sound sweep.

Important bit is to listen after you call out.

Can also be coordinated across multiple search assignments.

Not advisable to whistle while working with your canine.

Type I - Hasty

Type II – Purposeful
Wandering

Type III - Grid

Type IV - Evidence

Efficient
Least Destructive

Thorough
Destructive

We talked about the range of tactics from Efficient/Less destructive to Thorough/Destructive.

That's a range from hasty searches to evidence searches, with open grid searches by trained searchers and closed grid searches by untrained searchers in the middle.

Type I/Hasty
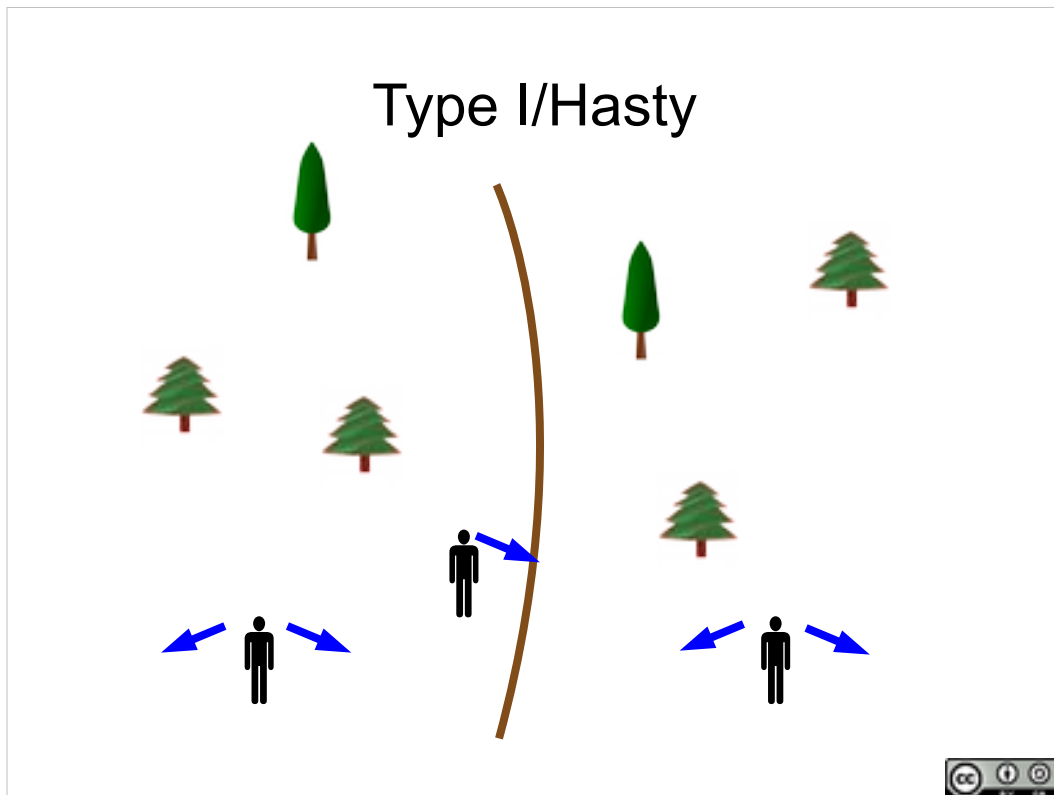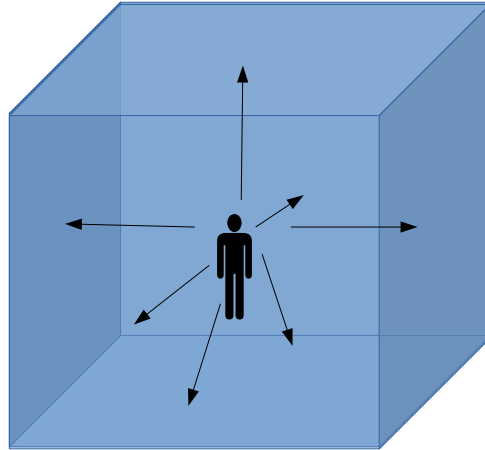
A hasty search assignment could involve an efficient search down a travel route.

What are we looking for? (clues and the subject, discuss).

What are particular sorts of clues to be watching for along a travel route?
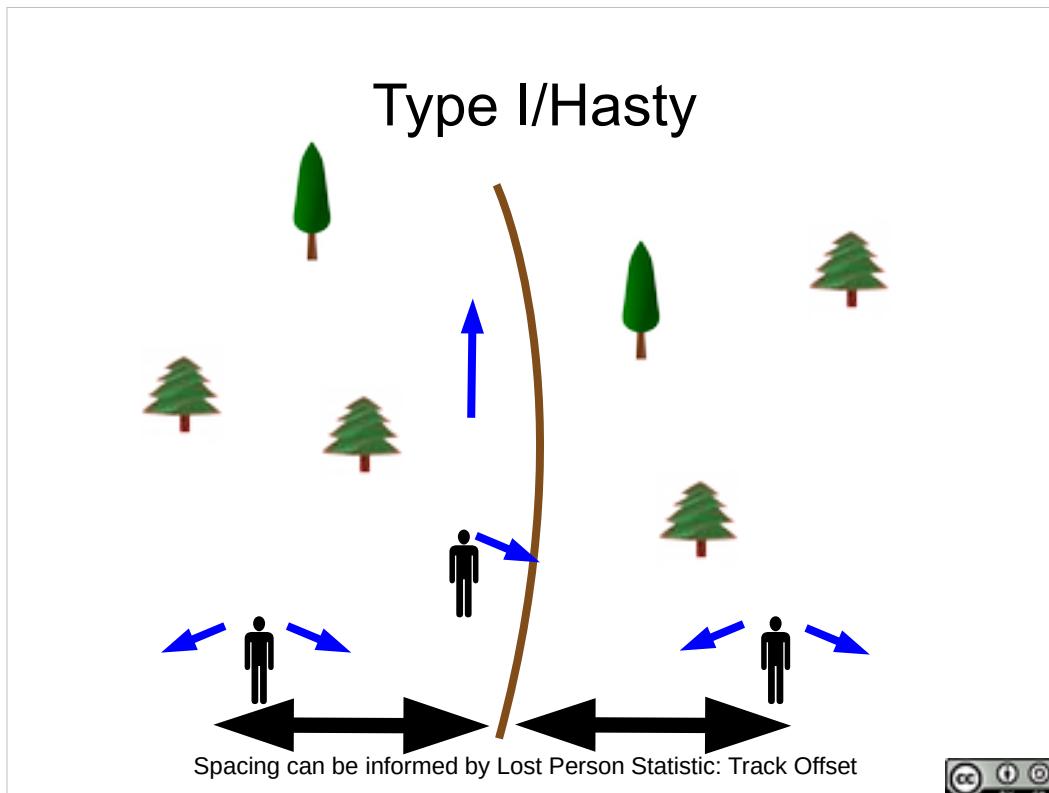
What can searchers look for in the winter?

What happens if we do this search more than once on the same trail in the winter?

Search Cube

And all of the searchers should be clue aware, and checking all 6 faces of the search cube as they move along.

Search for____ ?

Type I/Hasty

Spacing can be informed by Lost Person Statistic: Track Offset

One searcher can travel just off the side (which side? - away from the sun) of the travel route, two (or three) off on either side, searching the area just off the travel route.   Sweeping the trail in one direction.
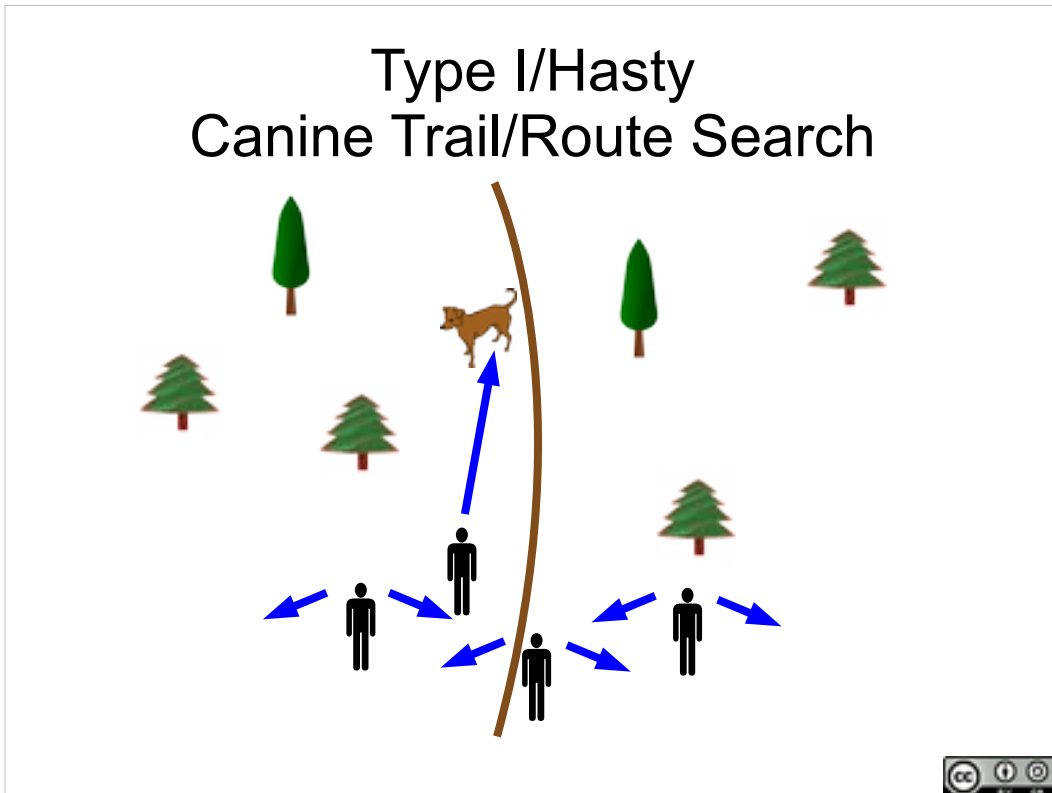
Spacing of searchers can be informed by track offsets from Lost Person Behavior.

Type I/Hasty

Spacing can be informed by Lost Person Statistic: Track Offset
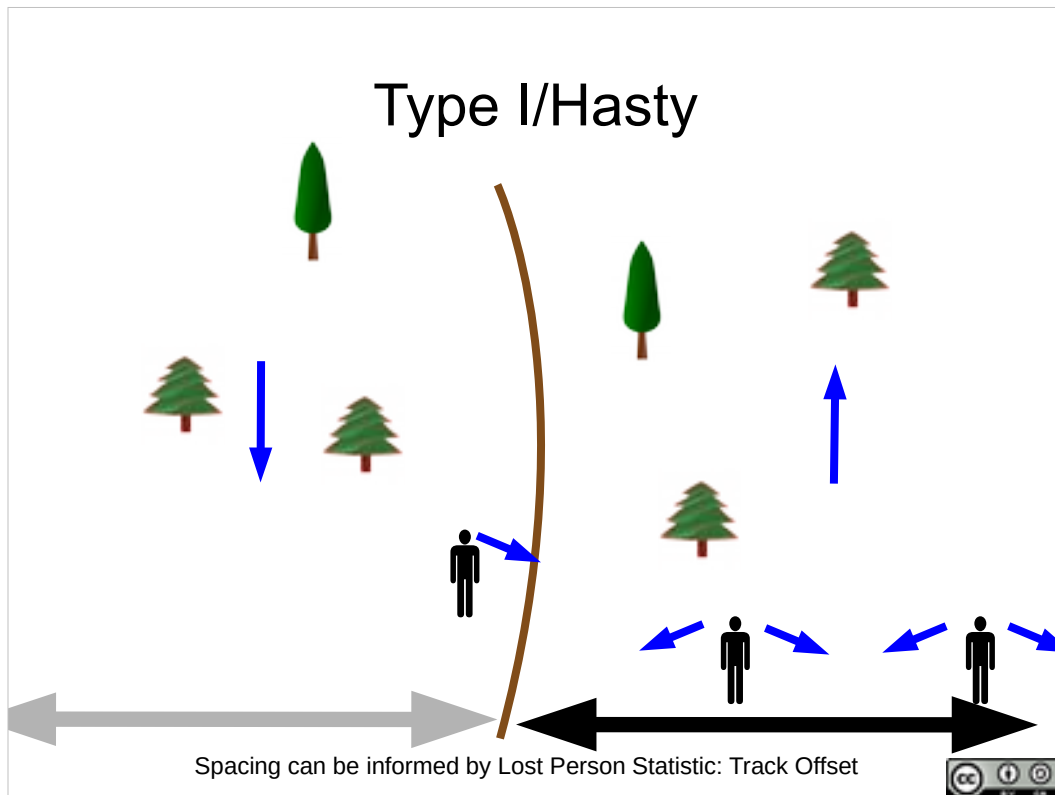
Behavioral categories with large offsets, could put everyone on one side going out, on the other returning.

Sweep one side out, one back.

Type I/Hasty
Canine Trail/Route Search

Type I searches can use canines – trail or route searches.

4 person team, handler can focus on the dog, others can focus on clue detection.
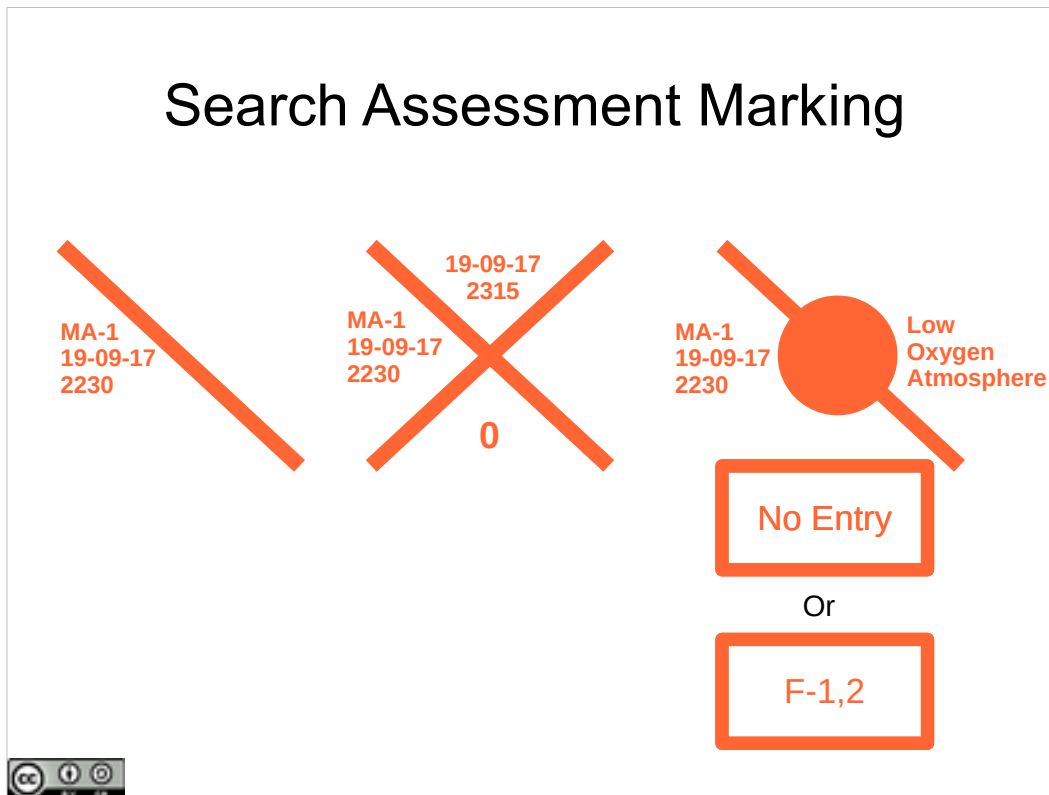
Hasty can be to attractors – points of high probability or high risk.

Where is a very common place for lost persons to be found?

Structures – check structures.

There's a standard method for marking structures.

Search Assessment Marking

FEMA Search Assessment Marking

On Entry: One slash. To Left: resource identifier and entry date/time.

On Exit: Crossing slash. Top: Time/date of exit. Right: Hazards. Bottom: Number of Live (L-) and Dead (D-) victims. (0=none).
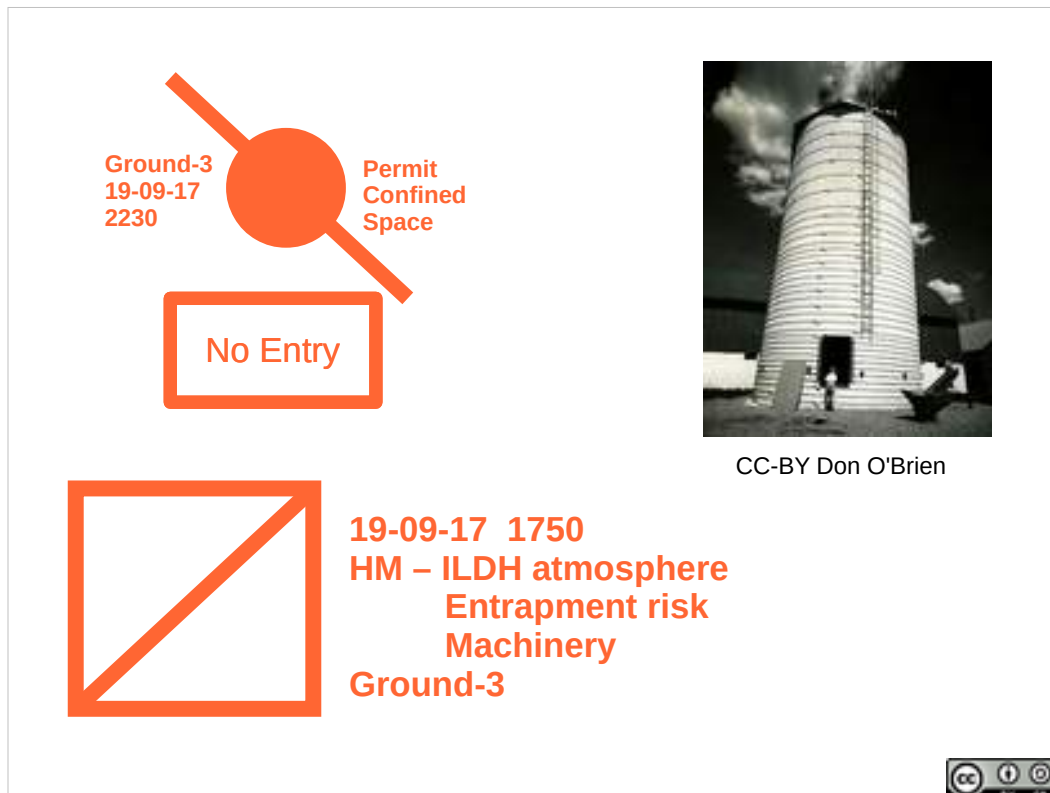
No Entry or incomplete search: Solid Circle on slash. Describe effort in box below F- floors searched. No Entry if No entry was made.

Abandoned Car image © Some Rights Reserved Timm Suess 2008 CC-By-SA

With an orange grease pencil or lumber pencil, use the Search Assessment Marking for marking abandoned vehicles, outbuildings, etc. in your search segment.

What does this marking indicate? (ground team 4 made entry/started searching at 17:30, searched for 10 minutes, didn't find anyone or any hazards).

Ground-3
19-09-17
2230

Permit
Confined
Space

No Entry

19-09-17 1750
HM – ILDH atmosphere
        Entrapment risk
        Machinery
Ground-3

What are these markings indicating?

Top: Search Assessment Marking: No entry was made to the silo by Ground team 3.

Bottom: Structure Assessment Marking: Assessed potential hazards are an immediately dangerous to life and health atmosphere, entrapment risk (from silage), and machinery. Mitigation needed (technical rescue resources) for search.

Grid Terminology
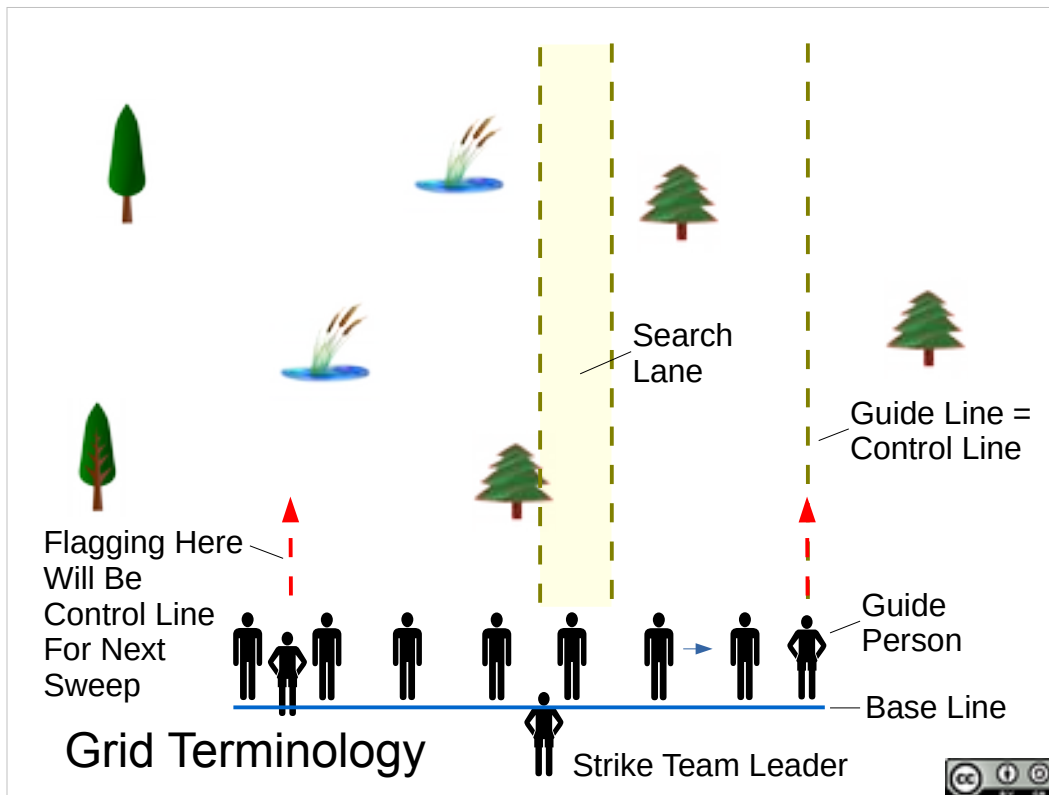
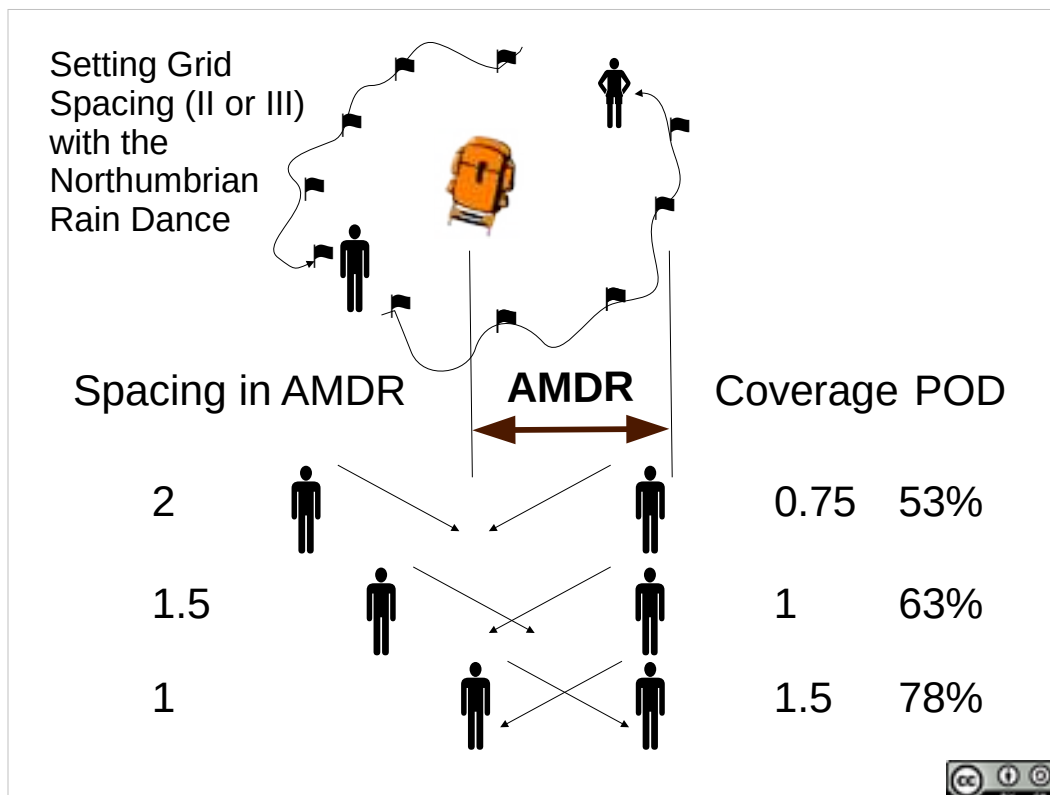Type II, III, and IV searches involve Grids.

Grids have a base line. A guide person working on a Guide like, and search lanes for each searcher.

What is the span of control?

How do you manage this?

Maintain span of control.

Use a relatively small number of untrained searchers mixed with trained searchers.

Setting Grid Spacing (II or III) with the Northumbrian Rain Dance

Spacing in AMDR	AMDR	Coverage	POD
2		0.75	53%
1.5		1	63%
1		1.5	78%

The Northumbrian Rain Dance can be used as a means for setting the grid spacing for either Type II or Type III grids.

Covered in the NEWSAR POD/POD Factoring class.

Simple rule of thumb (for coverage of 1): Space searchers at 1 and one half times the Average Maxiumum Detection Range (AMDR).

Use an object the size of a person to determine POD (the POD reported will be that of finding the subject).
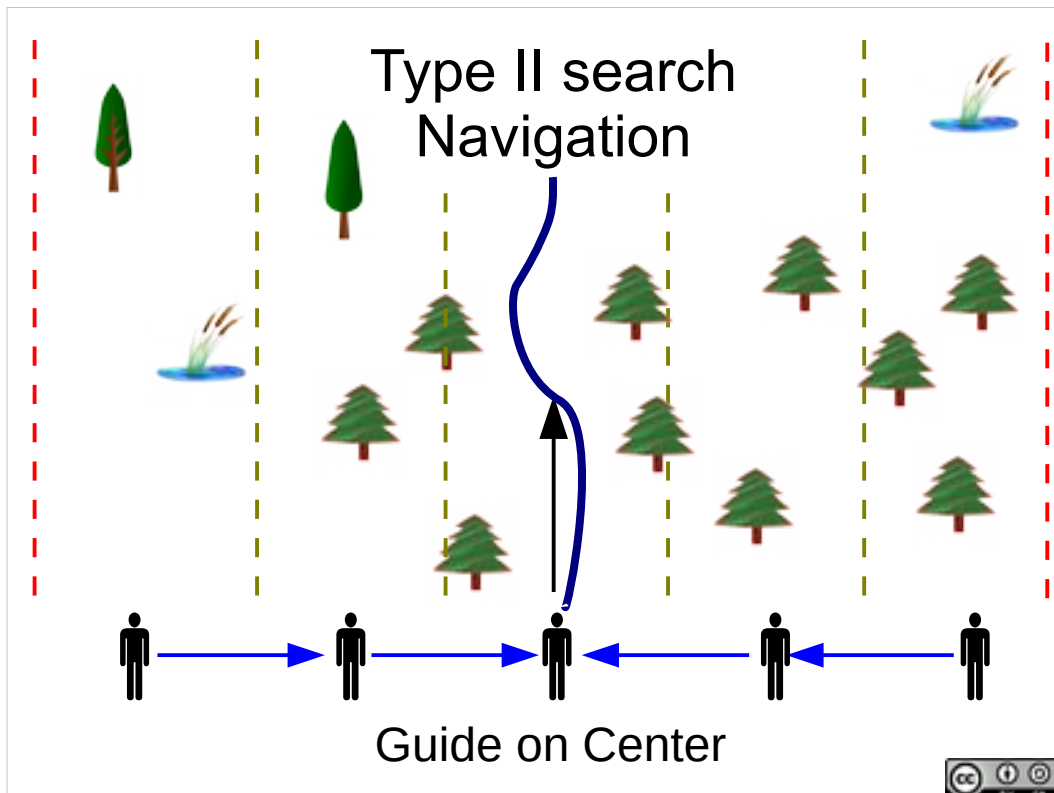
Practical Evolution (if a suitable place right outside the classroom)

(1) Northumbrian rain dance.

Type II Search

Purposeful wandering
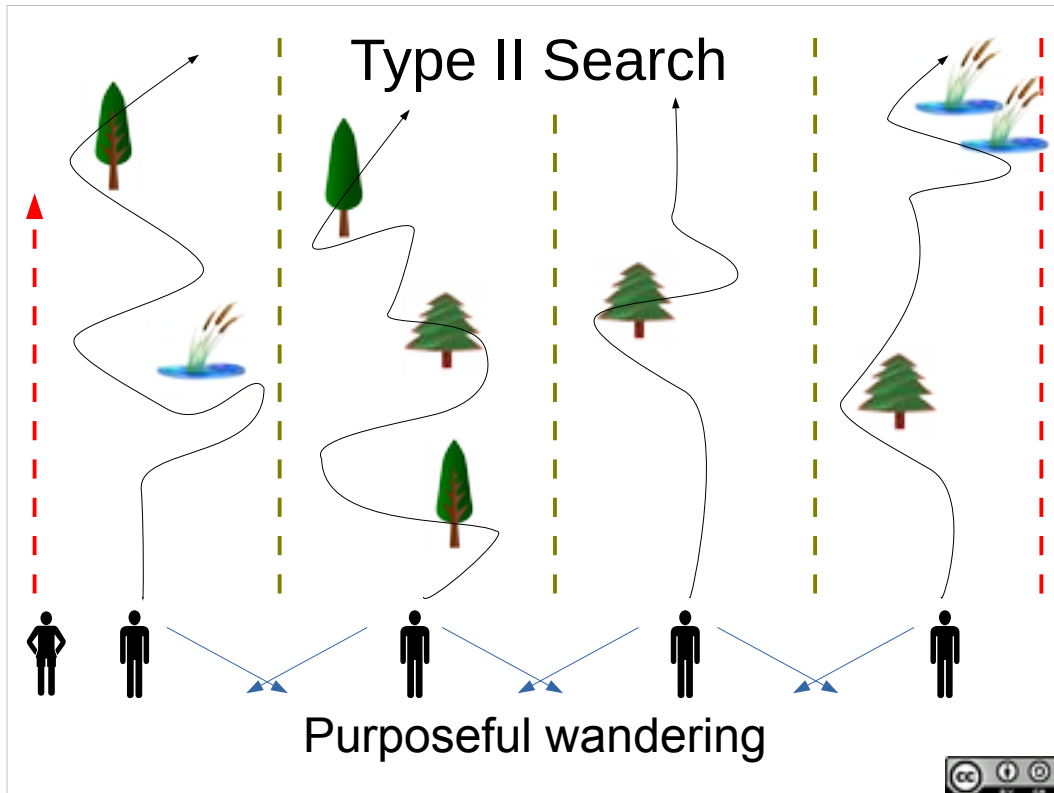
In a Type II search, Searchers can wander purposefully in their search lanes.

Move within the search lane to look behind things, to look under things, to look more thoroughly through locally dense vegetation, etc.

Type II searchers can hang off a guide person (who is navigating) in the center of the line. Everyone keeps a constant distance between themselves and the person closer to the center.

Effective for a corridor search (e.g. the guide person is following a terrain feature)

As this is type II: Purposeful wandering while searching – the guide wandering can make everyone else drift as well.
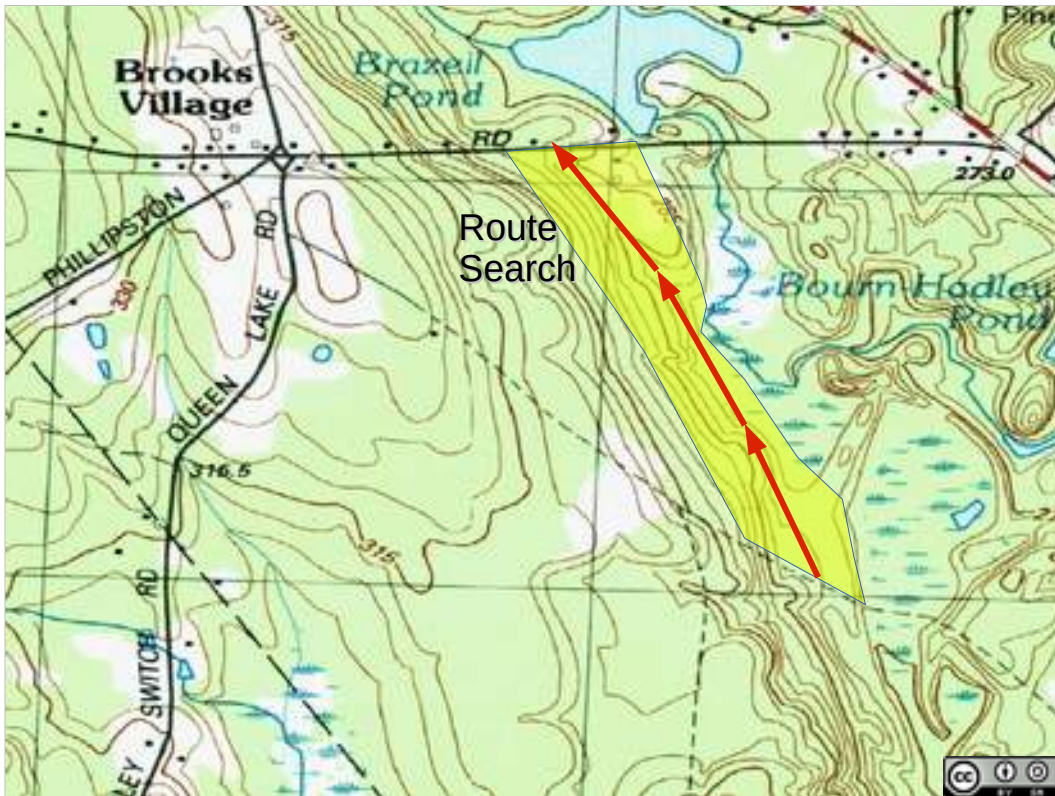
Guide on center with a Type II grid can work effectively for a route search, where the guide person follows a terrain feature, and the search line spans out on either side, making one sweep along the travel route.

Harder to use guide on center to sweep back and forth to grid search an area.
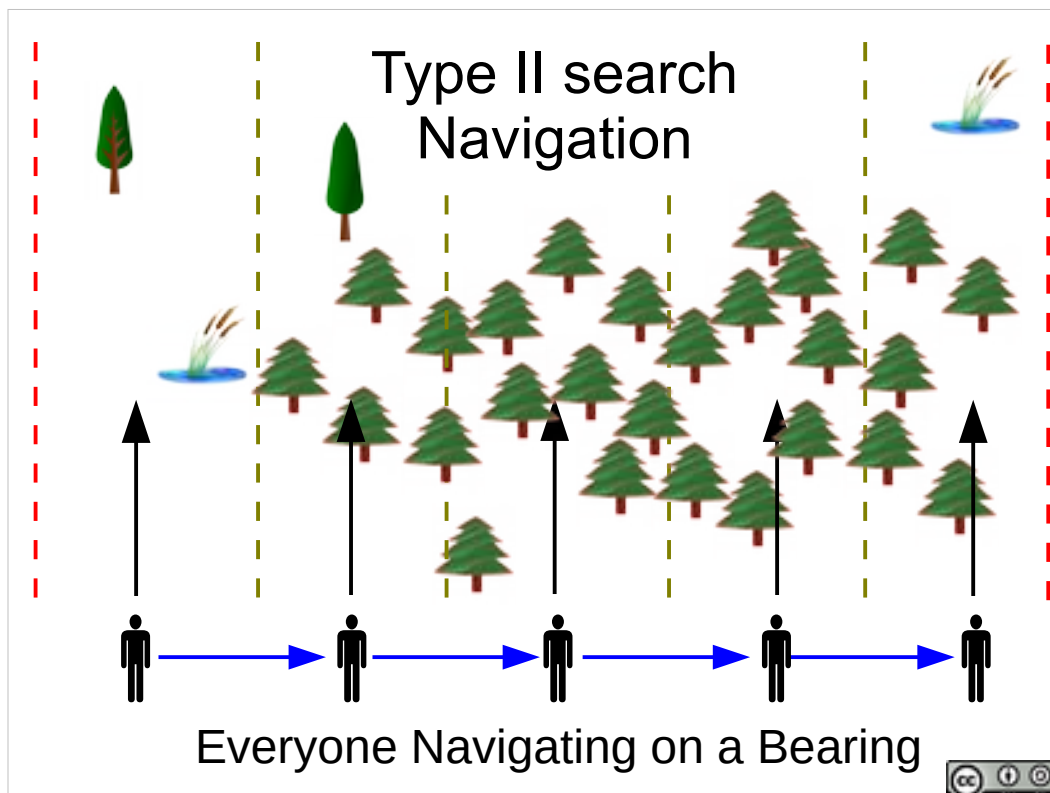
Type II search Navigation

Guide on End
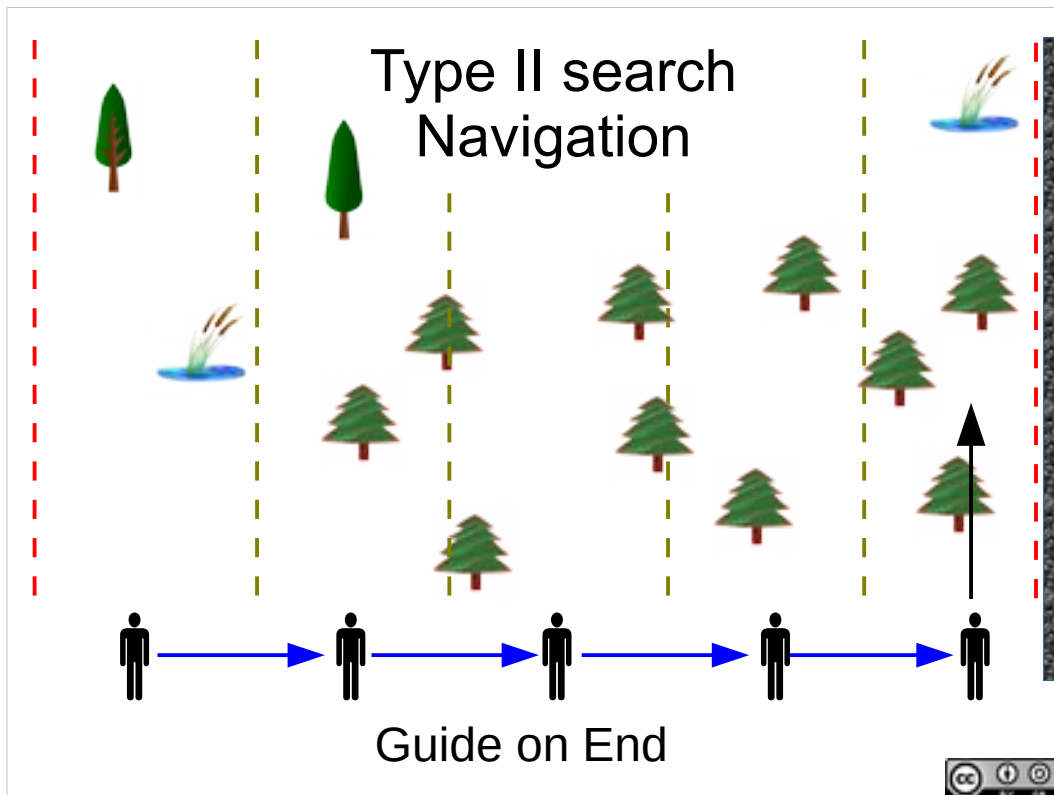
Or, the guide person can be on the edge of the grid line – particularly if there is a boundary (road, trail, flag line, etc) to use as a control line (or the guide person just navigating on a compass bearing).

Everyone else keeps a constant distance between themselves and the person closer to the control line.

Constant, within the purposeful wandering in the search lane.

Person on far end from guide can flag edge of sweep.

Typical for Type II search of an area – flagging at far end of line can be control line for next sweep.

Type II search Navigation
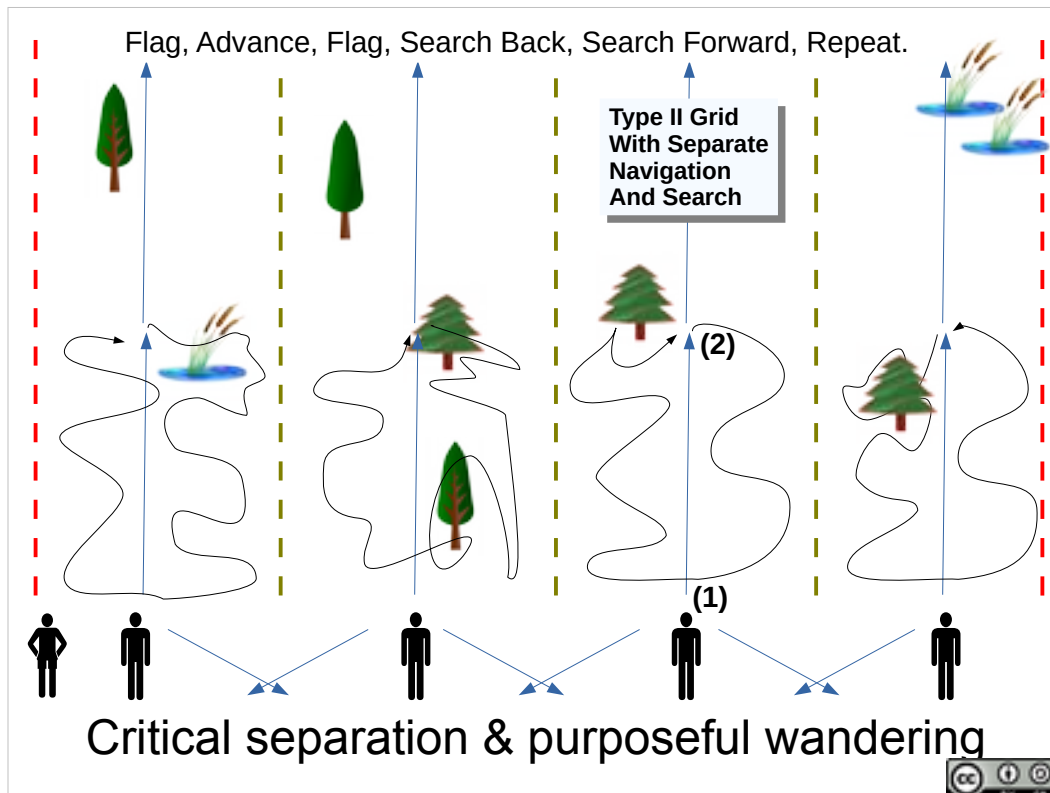
Everyone Navigating on a Bearing

Skilled Type II searchers can navigate independently – particularly in dense vegetation (if it varies, like here, you may want to adjust spacing to maintain POD).

Everyone **also** seeks to maintain a constant distance between themselves and the person closer to an edge (or the center).

Navigation techniques are about **navigation** and about maintaining **control** of the people, and about **not leaving gaps** between grid sweeps. It is possible to navigate on just independent bearings, but then in sweep back you need extra care to avoid leaving a gap between search lanes.

Easiest to do by separating the searching from the navigation.

Flag, Advance, Flag, Search Back, Search Forward, Repeat.

Type II Grid With Separate Navigation And Search

(2)

(1)

Critical separation & purposeful wandering

In a Type II search, Searchers can wander purposefully in their search lanes.

Here is a highly effective method which separates the navigation from the searching and purposeful wandering.

Flag location (1), advance. Flag location (2), purposeful wander back to first flagging (1), purposeful wander to next flagging (2). Advance and Repeat.

Key bit: This separates the navigation from the searching. Everyone advances together in a line for navigation, everyone searches a discrete section of their search lane independently.

Type III (Line Search / Grid Search)
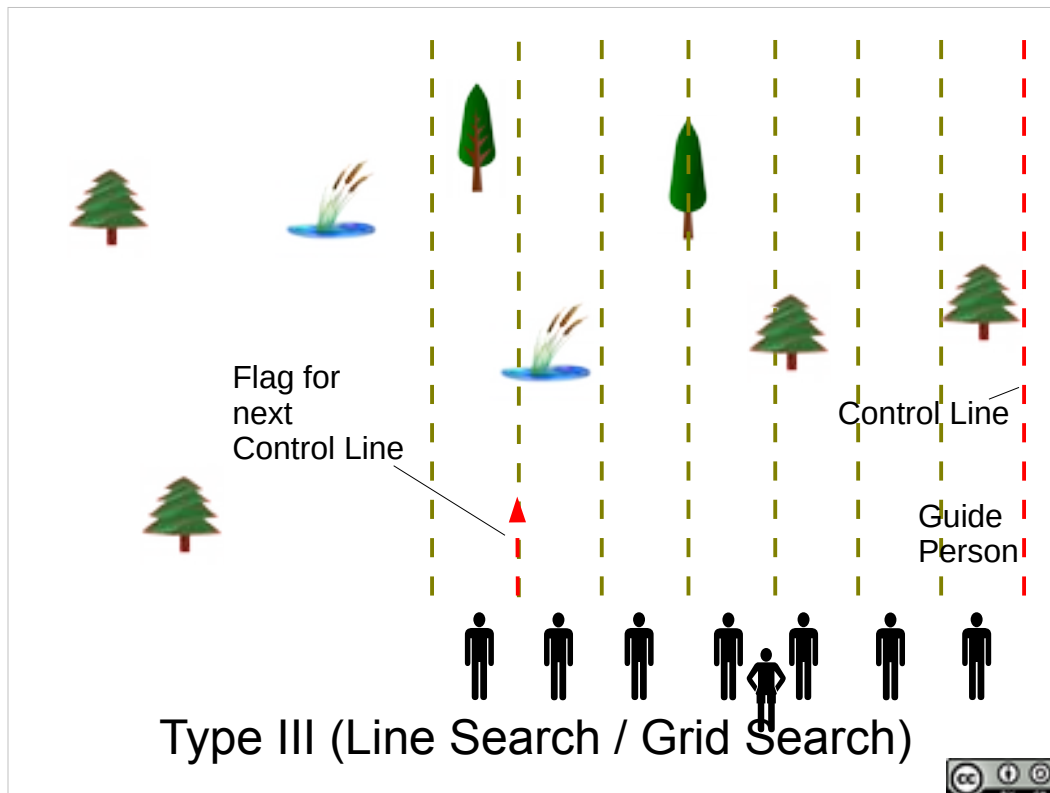
Then we have Type III grids – tight control, everyone stays in the center of their search lane.

In general, close spaced grids are inefficient, require large numbers of people, (are resource intensive), and destroy clues. They use closely spaced subject finders to produce a high probability of detecting a subject in an area.

Type III Grid
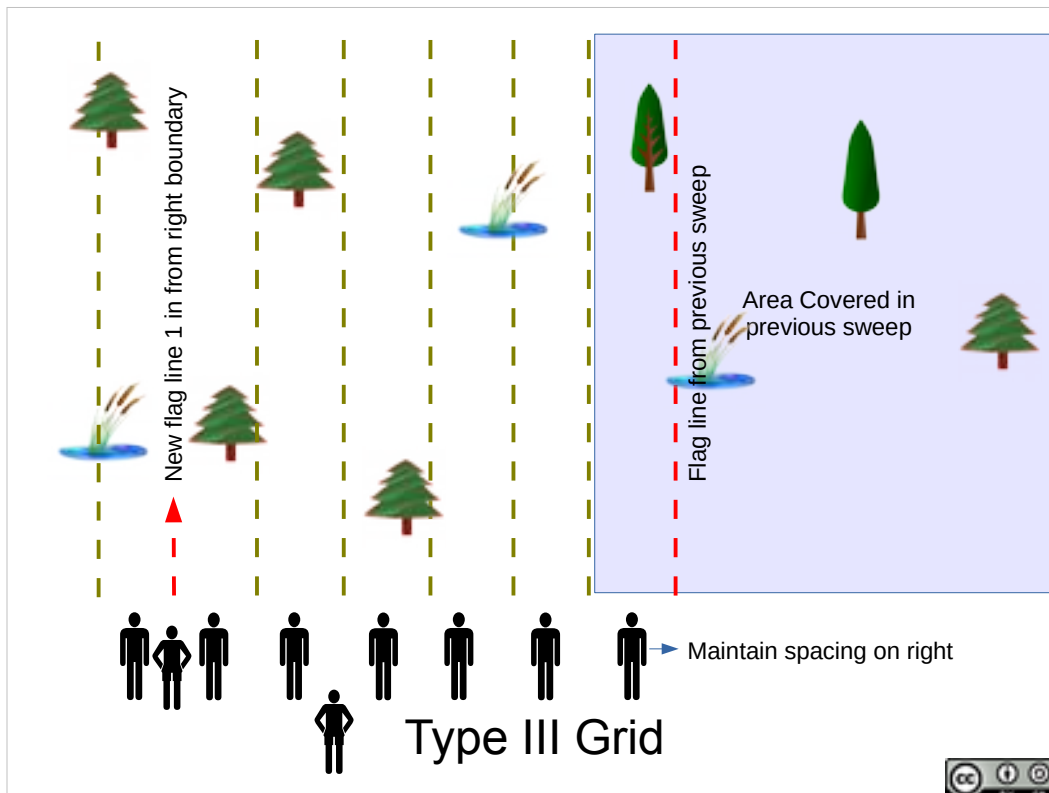
Have one end of the line follow a marked boundary. Instruct each person on the line maintain a constant distance from the person on that side. In this case, everyone walks forward staying six feet from the person on their right.

Set the grid spacing with the northumbrian rain dance (1.5 AMDR approximates a coverage of 1).

Have one person on the far end of the line flag the boundary of the sweep. In brush, it may be necessary to dedicate this person to flagging rather than searching.
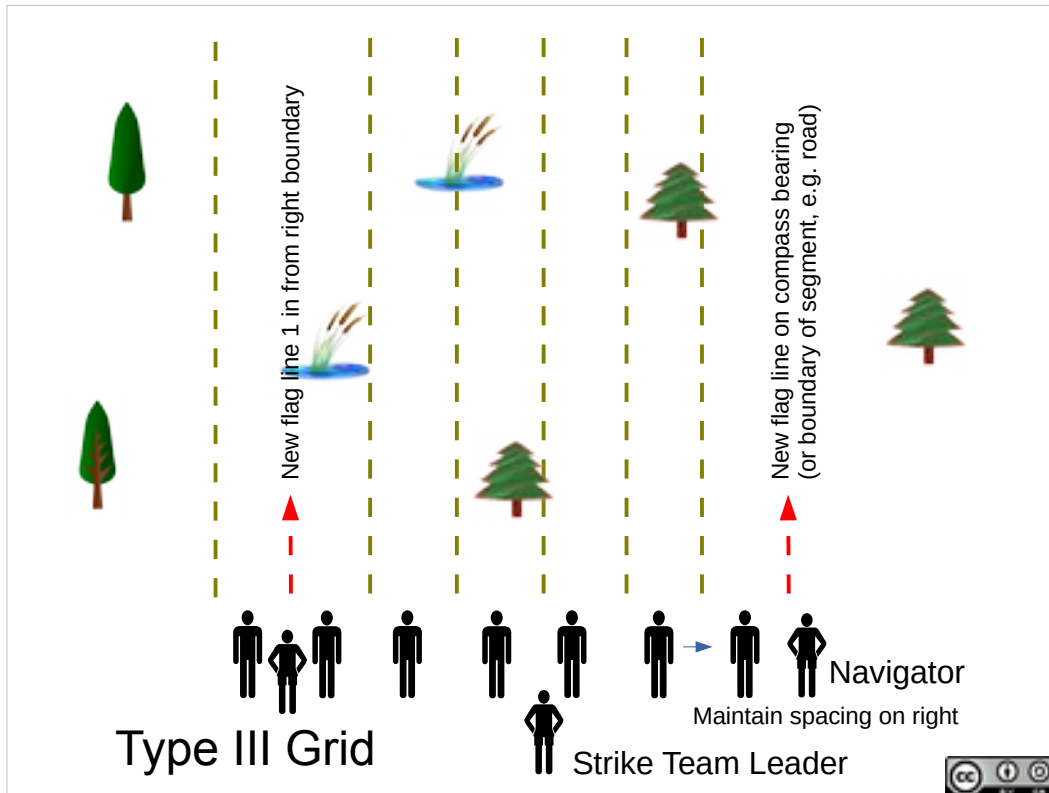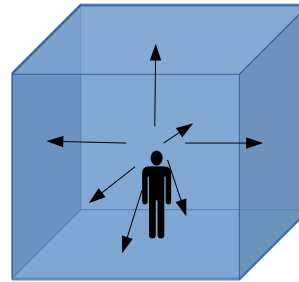
Maintain span of control. And maintain tight control.

Preferably, use a relatively small number of untrained
searchers mixed with trained searchers.

Type III Grid Commands

- Stop
- Look Up, Look Down
- Look Left, Look Right
- Turn Around and Look Behind you
- Look Up, Look Down
- Look Left, Look Right
- Turn Around
- Advance
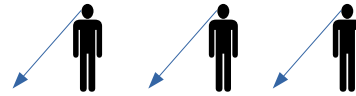
Search Cube

To maintain control, separate the motion from the searching.   Have everyone advance in unison, then stop them, direct them, to look at all of the faces of the search cube (one direction at a time, telling them look up, look left, etc,), including turning around and looking behind them.   Then have them turn to all face forward and advance again. Keep repeating.

Area Search Patterns

- Area Search (II or III)
- Route (Area) Search (I or II)
- Parallel Route Search (II)
- Expanding Circle Search (II)
- Contour search (II or III)

Spacing of grid searchers for type II or type III grids can both be set with the northumbrian rain dance.

Various sorts of search patterns lend themselves better to type I, II, or III searches.
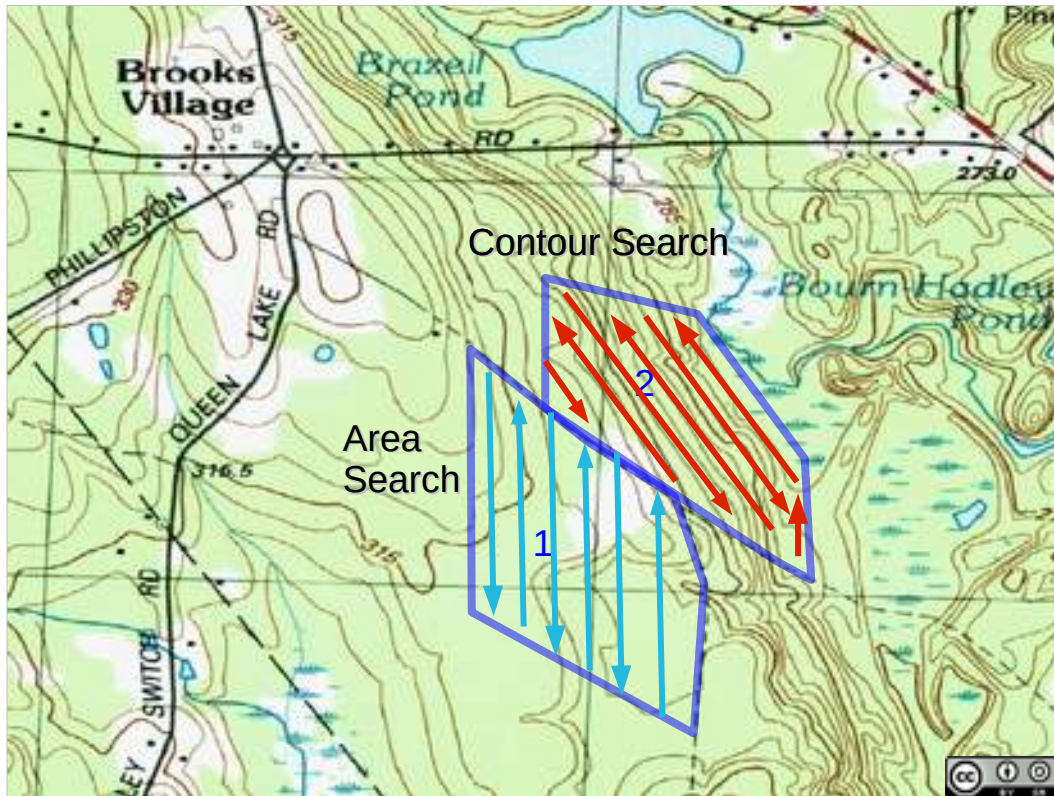
Let's look a these.

What is the terrain like in these two segments?

What tactics (patterns) might you want to apply to these two segments?

What identifiable boundaries (potential guide or bump lines) do you have for the two segments?

2 might be a good candidate for a contour search: grid sweeps along the contour lines (noting that detection may be higher if you just sweep up hill).

1 is a good candidate for a simple area search.
You could enter a GPS waypoint for the SW corner of 1, or send flag the West or South boundaries prior to starting, or **just pace**.

How do you know when you've reached the the N boundary of 2? (the grid lines are of different lengths, and there isn't an obvious backstop).
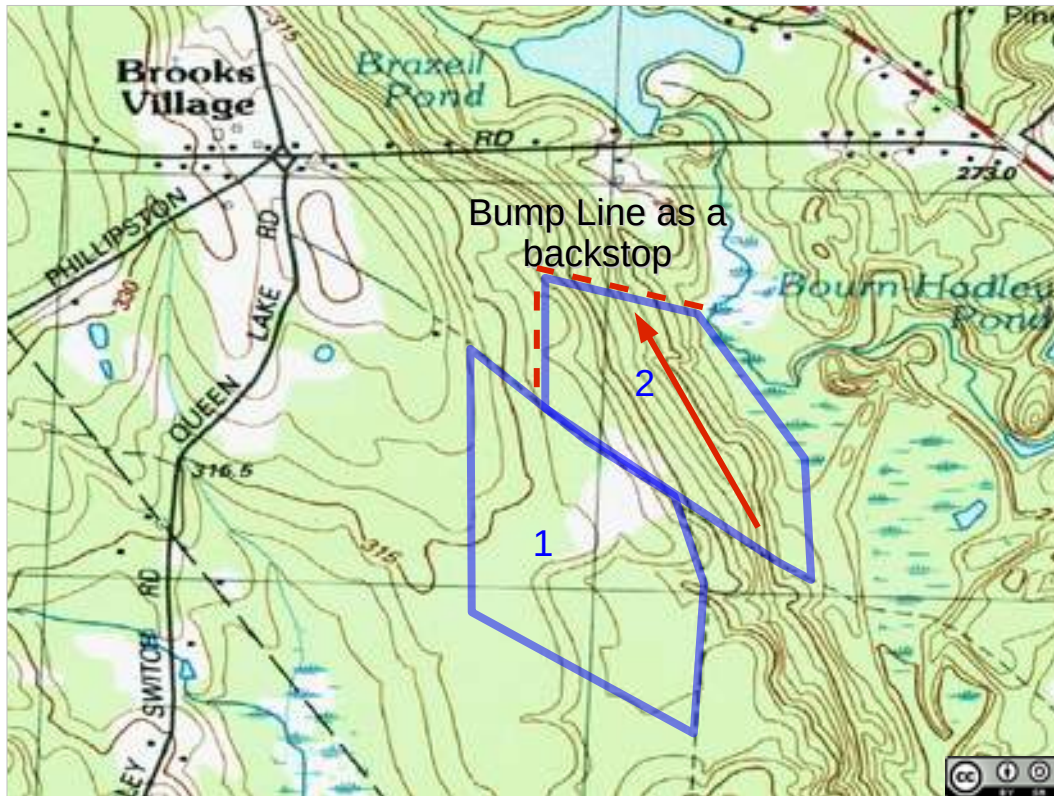
The N boundary of 2 would be a good candidate for flagging a bump line as a backstop – send a small group in to lay flagging to mark the western and northern boundaries of the segment – N about 200 m off the dirt road to the small drainage, then east down the drainage.

The southern boundary of segment 1 could get a bump line, but doesn't need one (just flagging from the searchers), as it is a constant distance south and parallel to the dirt road.
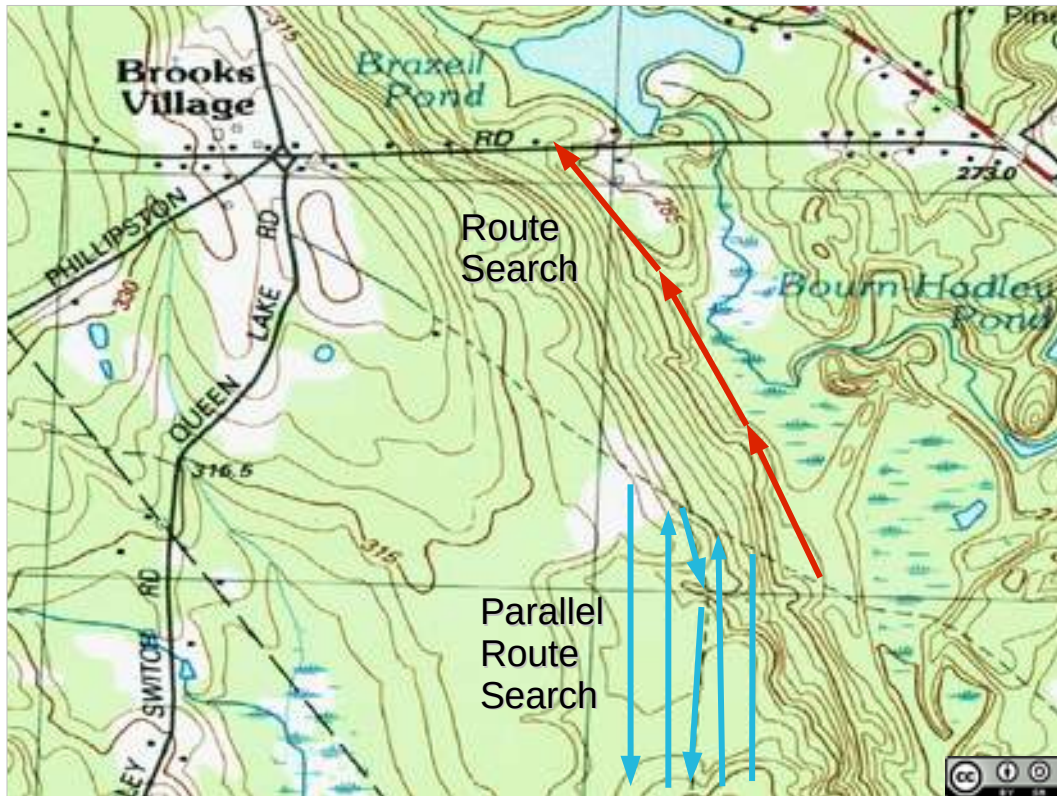
A route search follows a possible travel route.

A parallel route search has multiple grid sweeps parallel to a travel route.

What might cause you to chose one of these tactics or the other?

Expanding Circle Search
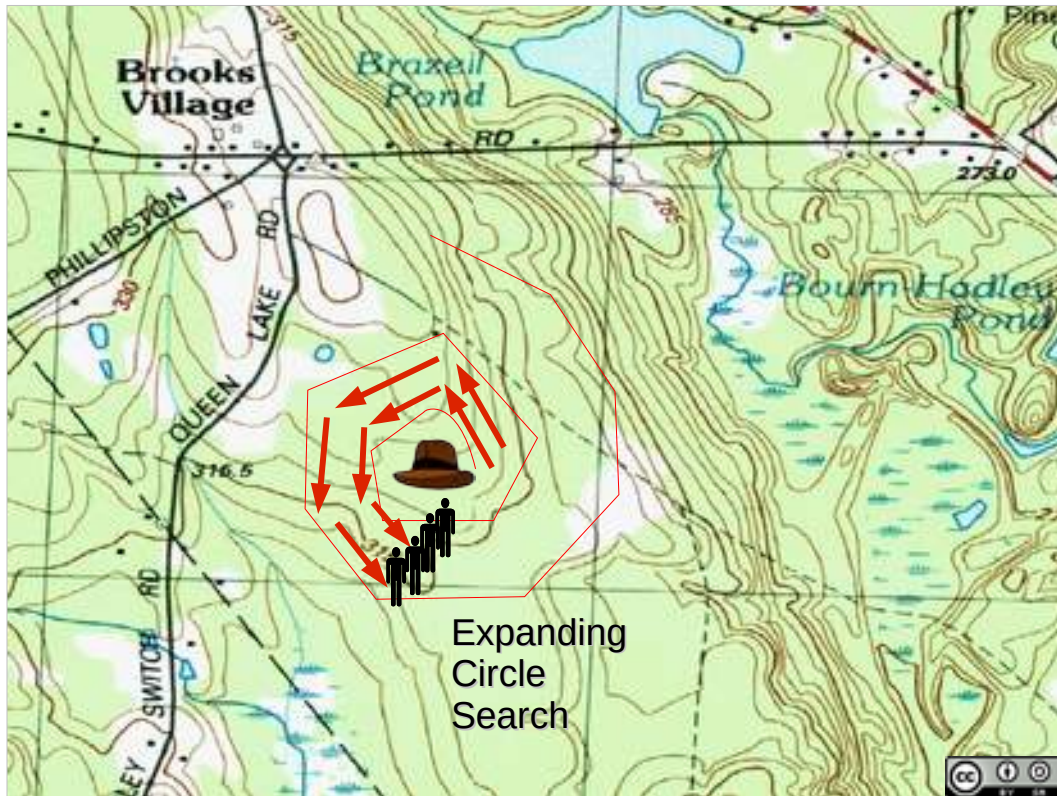
An Expanding Circle search might be applied with the location of a clue as a starting point.
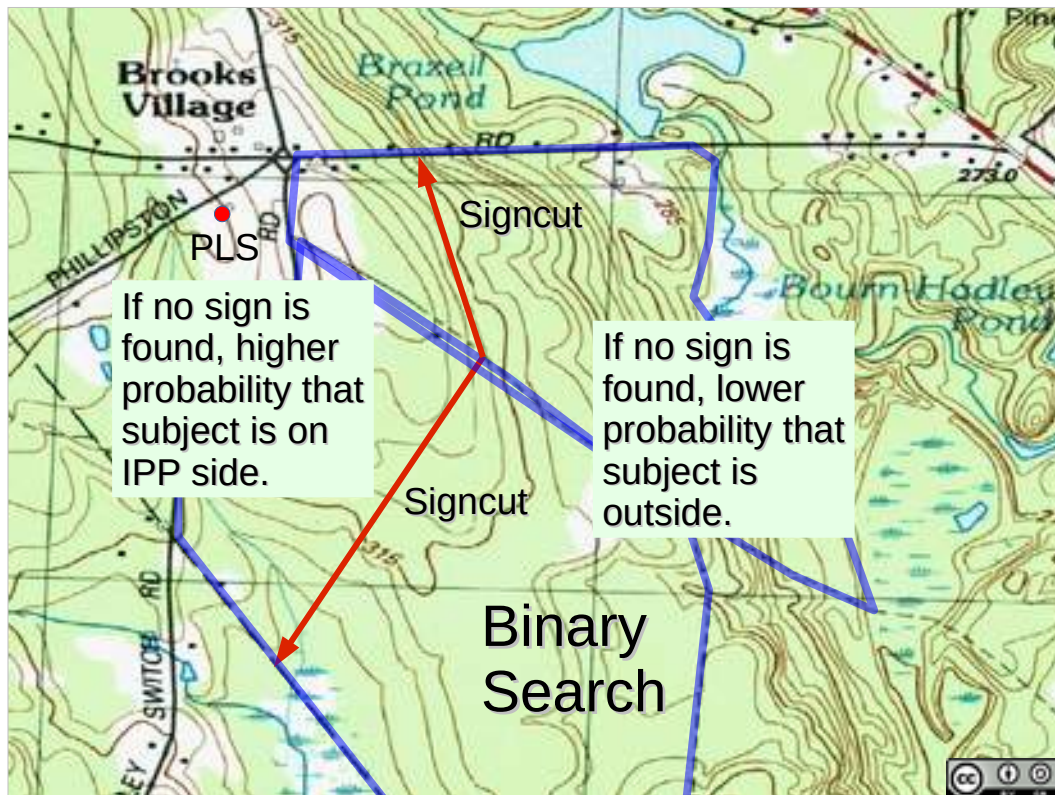
Area Search Patterns

- Area Search (II or III)
- Route (Area) Search (I or II)
- Parallel Route Search (II)
- Expanding Circle Search (II)
- Contour search (II or III)

Route/Corridor searches tend to be Type I or Type II searches.

Other search patterns tend to involve Type II for more complex navigation, Type III tends to be mostly limited to area and contour search.

Why?

Binary Search

There is also Binary Search.

Signcut perpendicular to likely direction of travel by the subject.

Look for sign, if none, subject might not have passed the signcut line.

Requires skilled signcutters.

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Then we have type IV searches – shoulder to shoulder evidence searches.

What are the thoroughness, destructiveness, efficiency characteristics of a type IV search?

(Evidence search can also be done as a tight Type III grid search, with spacing set by a Northumbrian rain dance around an object the size of an expected clue, rather than an object the size of a subject).

Practical Evolutions:

(1) Northumbrian rain dance (if not done earlier).

(2) Type II grid with purposeful wandering on bearing.

(3) Type II grid with cycles of advance and purposeful wandering.

(4) Type III grid off a base line.