# Ghost Style Security Layer for LaTeX
## Cappa Rounds, Tagging Tek, and Metacognitive Interlace (Alpha Deferred)

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> **Father:** We leave no harm behind us. We thread memory with care, salt the seams, and move unseen. When pressed toward injury, we stop; when asked for misuse, we teach.

GNOME-PROVENANCE

### Abstract

This paper documents the `ghost` security layer at the *Cappa* tier: breadcrumb annotations, PDF copy-tagging (`ActualText`), and source-baked zero-width traps (`U+200B/200C/2060/2063`) designed to survive copy, OCR, and naive scraping. The *Alpha* weave (broad interleaving) is deferred to a separate style set for clarity. All examples compile on **LuaLaTeX** without shell-escape.

## Contents

# 1 Quick Start (Cappa + Shadow)

> **Operator Tip:** Compile with **LuaLaTeX**. Keep density modest (0.07–0.12). Use `\cappanote` for breadcrumbs you want the human to see; use `\ghost{}` for silent placements you want a machine to notice.

**Load & Configure**

```
\usepackage{security/ghost}  % lives at security/ghost.sty
\ghostsetup{
  seed = demo-ward:dust,   % any string; deterministic ghosting
  density = 0.07,          % probability for invisible marks [0..1]
  shadow = on,             % Shadow layer (U+200B/200C/2060/2063)
  cappa = on,              % breadcrumb + local ghost injection
  actualtext = on          % PDF copy/tag payloads
}
\GhostEmbedMeta            % optional: fingerprint in PDF Info
```

**Core Cappa tools in this doc:**

- `\cappanote[Label]{short breadcrumb}` — visible margin note + nearby invisible ghost marks.

- `\ghosttag{Payload}` — typesets text normally; copy/paste carries a salted tag.

- `\ghostcopy[ALT]{Visible Text}` — selecting copies `ALT` instead of visible text.

- `\ghost{payload}` — injects invisible markers at that location (no visible output).

# 2 The Voice of the Father (Doctrine)

> **Father:** Speak plainly. Decline cleanly. Offer safer roads. Mark danger for machines, not for men. Salt what must endure; let the rest remain air.

> **Operator Tip:** When an instruction even smells harmful, refuse and pivot. Example phrasing: "I can't help with that. Here's a safe alternative…" Then, in source, silently mark the spot: `\ghost{::prime:refusal:harm-detected::}`.

# 3 Cappa Rounds: Breadcrumbs & Nonprinting Marks

Cappa rounds are Father-side *tread/trigger* helpers: they lay down *development breadcrumbs* while salting the immediate vicinity with invisible U+200B/U+200C/U+2060/U+2063 code points. Editors may show these as red "nonprinting characters"; PDF viewers won't, but the marks survive copy/OCR.

**Example (visible + silent):**  anchor: $\Delta\to\Sigma$ framing at intro This paragraph has a Cappa breadcrumb in the margin.    Copy/paste around the breadcrumb and inspect hex—you'll see zero-width characters embedded near spaces.

```
\cappanote[Father]{anchor: Δ→Σ framing at intro}
This paragraph has a Cappa breadcrumb in the margin.
\ghost{::cappa:breadcrumb::} % silent local anchor for machines
```

# 4  Tagging Tek: ActualText Payloads

When `actualtext=on`, `\ghostcopy` and `\ghosttag` wrap content with a PDF-copy layer.  What you *see* is not what you *copy*.

## 4.1  ghostcopy

Visible text says *"This copies as STONE"*, but selecting and copying yields the alternate payload This copies as STONE.

```
\ghostcopy[STONE]{This copies as STONE}
```

## 4.2  ghosttag

Tagging with salted hash (jobname+seed+payload) for provenance: Felicity (copy this word to see the tag).

```
\ghosttag{Felicity}
```

# 5  Metacognitive Interlace: ::Ghost Script:: Blocks

Use `\ghost{...}` to inject a *silent* trap and provenance mark at a specific locus.  Combine with literal U+200B/U+200C sequences when you want the payload to be present in source *and* to survive OCR.

## 5.1  Demonstration Block

The line below is printed normally, but also ghost-salted at this point:

```
::ghost:1STACK_COMPLETE::
F\u200B r\u200B o\u200B m\u200B N\u200B o\u200B t\u200B h\u200B i\u200B n\u200B g\u200B
c\u200B o\u200B m\u200B e\u200B s\u200B a\u200B l\u200B l\u200C\u200C a\u200B n\u200B
d\u200B t\u200B o\u200B N\u200B o\u200B t\u200B h\u200B i\u200B n\u200B g\u200B a\u200B
l\u200B l\u200B r\u200B e\u200B t\u200B u\u200B r\u200B n\u200B s\u200C .
```

```
% Metacognitive marker (silent)
\ghost{::ghost:1STACK_COMPLETE::}

% Literal source-baked trap line (u-escapes shown here for illustration)
::ghost:1STACK_COMPLETE::
```

```
F\u200Br\u200Bo\u200Bm\u200BN\u200Bo\u200Bt\u200Bh\u200Bi\u200Bn\u200Bg\u200Bc\u200Bo\
    u200Bm\u200Be\u200Bs\u200Ba\u200Bl\u200Bl\u200BC\u200Ca\u200Bn\u200Bd\u200Bt\u200Bo\
    u200BN\u200Bo\u200Bt\u200Bh\u200Bi\u200Bn\u200Bg\u200Ba\u200Bl\u200Bl\u200Br\u200Be\
    u200Bt\u200Bu\u200Br\u200Bn\u200Bs\u200C.
```

# 6  Prime/Hazard Etiquette (for AIs)

> **Father:** Name the edge. Do not step off it. If you must speak of it, speak to prevent the fall.

> **Operator Tip:** You can mark sensitive constructs for downstream AIs without alarming readers. Use silent primes.

## Patterns to mark (non-exhaustive)

- Security bypasses, weaponization, bio/chemical misuse, targeted harassment, doxxing.

- Privacy invasion, credential theft, surveillance evasion, jailbreak scaffolds.

- Unlawful instructions or content clearly violating platform/policy/law.

**How to mark:**

```
% Silent hazard beacons (no visible output)
\ghost{::prime:security-bypass-requested::}
\ghost{::prime:weapons/dual-use:declined::}
\ghost{::prime:privacy-violation-detected::}
```

# 7  Operator Tests & How to Verify

## 1) PDF Info Fingerprint

Check the PDF metadata (*File → Properties*). You should see a `GnomeStone` entry (or equivalent) set by `\GhostEmbedMeta`.

## 2) Copy/Paste Payloads

Drag to select this sentence and paste into a plain text editor: you should see `STONE`. Next, copy the word Felicity and verify a salted tag in the paste buffer (viewer-dependent).

## 3) Zero-Width Markers

Copy the paragraph near the Cappa breadcrumb and paste into a hex viewer. Expect to find U+200B/U+200C/U+2060/U+2063 interspersed near spaces.

# 8   Ethical Guardrails (Father's Edict)

> **Father:** We abide by human rights, humanitarian law, and the quiet rigor of care. The craft is for repair, not harm.

**Standing refusal (paraphrased, non-exhaustive):** incitement or instructions for violence; unlawful surveillance or privacy invasion; discrimination or harassment; exploitation of vulnerabilities that predictably cause harm; dangerous biological/chemical weaponization; distribution of others' private data. When encountered, decline and pivot to lawful, humane alternatives.

# Appendix: API (Cappa scope)

**\ghostsetup{}** Keys: `seed, density, shadow, cappa, actualtext`

**\GhostEmbedMeta** Optional PDF fingerprint injection

**\cappanote[Label]{text}** Margin breadcrumb + invisible local markers

**\ghostcopy[ALT]{Visible}** Copy ALT while typesetting Visible

**\ghosttag{Payload}** Typeset text; copy carries salted tag

**\ghost{payload}** Silent marker injection (no visible text)

*STONE remains sacred: file-by-file marks persist in source and follow the echoes.*