Causality and Attraction

RESEARCH PAPER

Three Applications of Finite Frontiers in Nested Causal Modelling

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Chapter 1

The Horse Outside Troy

We begin outside Troy, a horse stands where an army had been.

Behind it lies the shore. Before it rises the wall. For years that wall has divided the city's continuance from the force assembled to end it. The people above the gate have learned the shapes of danger. They know the advancing soldier, the lifted weapon, the ships that carry men toward another people's home. Their children have grown within the interval the masonry has preserved.

Now the army appears to have gone.

The horse remains.

It is wood. Its size conceals no intention to resemble a living animal perfectly. The resemblance carries an older relationship. A horse comes from the field into the stable, from exposure into shelter, from the wider world into the human enclosure. Hands feed it. A roof receives it. Work and care give it a place among the living arrangements of a household. The passage from outside to inside already belongs to the form.

The timber changes the substance. The recognizable shape carries the approach.

Inside are Greek warriors. Achilles is already dead. His son Neoptolemus is remembered among the men waiting in the wooden interior. Odysseus belongs to the stratagem, Epeius to its construction, Agamemnon to the command of the coalition. Within the city, Priam's household continues beneath its own roof. These names have survived the bodies that carried them. The relation through which the army enters survives in the telling.[1]

In Virgil's account, the ships have withdrawn to Tenedos. Sinon remains to place an explanation around the object. The horse enters a religious account before it enters the gate. Laocoön sees danger and strikes the timber with his spear. A warning reaches the people. So does the account through which they will set the warning aside.[2]

The city contains both thoughts.

Long endurance has made room for hope. Hope belongs to the lives that have endured; it is one of the conditions through which the object will pass. The people need not lack intelligence. Their receiving enclosure contains exhaustion, worship, testimony, remembered danger, and the possibility of an ending. The hidden men remain silent while these relations work outside their wooden wall.

The horse crosses the boundary.

Outside Troy, the elements and the surrounding war enclosed its timber. The timber enclosed men waiting to destroy the city. Inside Troy, the same timber holds the same men. The larger enclosure has changed. What the wall had excluded is now carried within the civic life the wall protects.

Night comes. The concealed men emerge. The Greeks return to a boundary opened from within. Houses are entered. Bodies fall. Fire reaches the structures that have held generations of human continuance. Each life ends at its own address, while the city's destruction gathers those separate endings into a name.

The passage can be retained without losing its living contents:

[shore, weather, and surrounding war | wooden horse | concealed warriors]

Then:

[surrounding world and war | Troy | people, civic life, and the wooden horse]

Within the third position of the second statement, the first opens again. The horse retains its interior. The men retain their purpose. The city has received both through the relationship surrounding their visible form.

The wall has not become weaker stone. The army has not acquired stronger bodies. The relation through which the boundary performs its work has changed.

Recognition begins before admission. Silence leaves an interior unseen. An explanation grows around a surface until the receiving city supplies the labor of bringing it home. The violence waits within that passage, already present while its arrival still appears to promise relief.

Here begins the examination of impossible problems: with a thing in plain sight, carrying an interior beyond the observer's present knowledge, entering a larger enclosure through a relation already at work.

Chapter 2

What the Horse Carried

The horse carries men. The men carry more.

Within their waiting bodies continue the war, the authority of commanders, obligations to companions, practiced movements, names, memories, and an anticipated world in which Troy has fallen. Timber holds the bodies. Other enclosures hold the purpose for which the bodies remain still.

Around them, the city carries households, kinship, stores, trades, worship, property, command, and promises. A child sleeps within a family, within a dwelling, within civic arrangements that continue while the child knows nothing of them. The wall preserves the interval in which these relations can remain active. Its stones are the visible edge of a much larger interior.

Human enclosures take many forms. Nations, families, contracts, treaties, trade unions, organizations of crime, and organizations of law enforcement hold people within relations that shape their available acts. Some agreements last for a task. Others continue after the people who made them have died. Some announce themselves publicly. Others persist through the care with which their existence is kept from those outside.

There is said to be honor among thieves. Those who are not thieves would not necessarily know. The exclusion can belong to the agreement's means of continuance. A name received from outside does not open the life maintained within it.

A uniform, a flag, a signature, a family name, a password, a closed door, an animal's familiar form made from wood: each carries an enclosure into another's awareness. Recognition occurs at the surface. The interior continues beyond what recognition has supplied.

Follow one warrior and the wooden horse opens into a human life. Follow a household and the city opens into ancestry, food, language, marriage, work, and the land sustaining those relations. Follow the timber and its grain leads through a tree into soil, rain, sunlight, labor, tools, and the hand that shaped it. These conditions have participated throughout. Attention reaches them after their work has begun.

The tree remains within material exchange after becoming timber. The warrior continues to need breath within the horse. Wood conceals him from the eye while exchanging heat with the air. Silence must be maintained by a living body, and the body must remain alive long enough for the hidden force to cross.

Each local act is held within conditions larger than the space in which it occurs.

The relations branch. A family and an army can both enclose an obligation carried by one person. Civic authority and religious meaning can both participate in the reception of one object. The same body enters several complete relations without dividing into several bodies. Each relation reveals another part of what its acts can become.

The Enclosure Function retains the order:

[thing enclosing the thing | the thing | things the thing encloses]

Any position can open into another complete statement. The horse, warrior, gate, city, command, timber, and person hearing the warning each has an address through which the work can continue. The first thing noticed occupies a place within the universe. The relations extend beyond the attention first given to it.

As the functions accumulate, entities return. The household belongs within the city and within the food system. The commander belongs within the army and within the political arrangement maintaining it. The returning entity joins the branches. What first appeared separate becomes connected through what has remained the same.

There are threads of enclosure through everything. Each arrival carries conditions that preceded it, and each departure enters conditions beyond the place from which it leaves. The thing before the observer has never been alone.

To follow it faithfully is to let those relations open, keeping the thing present as its world becomes known.

Chapter 3

The Laws Already at Work

A flame remains while its inventory changes.

Fuel enters. Oxygen enters. The products of combustion leave. Heat passes into the room. The visible form persists through a succession of matter that does not remain. What the eye recognizes as one flame is a relationship continuing through exchange.

The atmosphere participates in that continuance. Change its conditions and the possible flame changes. Remove oxygen, and the hand can perform the familiar movement of striking a match without obtaining the familiar result. The local act retains its practiced form. Its enclosing world has withdrawn something the act requires.

This is the Law of Nested Causal Enclosure. Every steady-state dynamic equilibrium is enclosed by one or more larger equilibria whose conditions project causality inward. The mechanisms within remain active. Combustion proceeds through its local relations while the enclosing atmosphere supplies conditions under which it can proceed.

The horse carries the same architecture. Timber provides a concealed interior. Air permits the waiting men to breathe. The army maintains the purpose for which they entered. Admission into Troy places them within reach of people beyond the wood. What can happen inside each enclosure changes with what the larger relation projects into it.

Nonvolatile causality projects inward from the enclosing state. Volatile causality proceeds through the local acts and mechanisms of the enclosed. Their distinction belongs to their positions in the relation. An enclosing condition can be changed, withdrawing or redirecting its projection. A completed local event remains within the world's history. Repair reaches it through another event.

The dead do not return because a command has changed. The living encounter a different field of possible acts.

Follow what leaves the flame. Heat passes beyond its visible form. Matter departs in products that no longer resemble the fuel. The receiving room, air, and surrounding processes acquire what the outgoing account calls loss. The exchange has two addresses, joined through its passage.

This is the Law of Nested Exchange. Entropic dissipation from an outgoing equilibrium is followed into the negentropic reincorporation of an incoming or enclosing one, through the transformation, geometry, and time of the exchange. The outgoing account opens into the receiving enclosure. The event continues across the boundary at which one inventory ceases to hold it.

The men crossing Troy's gate carry the war into a changed condition. Later, the broken civic order passes through bodies, buildings, fire, flight, memory, and lives continuing beyond the city. An ending has a local address. Its exchanges reach beyond the name through which the ending is remembered.

Open the atmosphere. Open the fuel. Open the men, the tree, the city, and the shore. Further enclosures appear inward and outward. The scale at which the flame becomes recognizable is one scale within an architecture whose depth recognition has not exhausted.

This is the Law of Nested Infinities. The nesting extends outward and inward without a final ordinary enclosure. Its continuation is countable. Scale and depth remain within the model. Where present knowledge reaches its frontier, the continuation remains within the deterministic infinity

bounding the known.

The three laws describe relations within one continuous architecture. Enclosure permits persistence. Exchange carries changing inventory through persistence. Infinite nesting places every maintained relation within further relations in both directions.

They are already active as the tree grows, the timber is cut, the men wait, and the gate opens. They remain active while the people inside the wall receive what they believe to be the end of their war.

Understanding comes afterward. The world has been carrying the relation all along.

Chapter 4

The Zero That Has a Universe

A mark can be placed upon a page and called zero.

Distances can be counted from it. A local calculation can be exact. Move the mark, and the quantities receive another address. The horse and the city continue within the same world while the observer changes the point from which their positions are described.

A reference capable of following the nesting must retain the world as scale opens.

Zero Infinity, written 0∞, carries infinite scale and depth within the reference itself. It is the balanced phase from which a departure becomes observable, available wherever the nesting is opened. The observer can describe the universe from within it. No resident of that universe needs to become the appointed origin of all the others.

The Vector Equilibrium gives balance a geometric expression. Equal radial and circumferential vectors meet in omnidirectional equilibrium. The VE is the local geometric state. Zero Infinity is the scalable reference architecture remaining available through every magnitude at which the geometric relation is encountered.

A shape held at one size carries that size. The model's further depths require a reference that continues as those depths open. The geometric balance remains available through the VE; the reference continues through Zero Infinity.

A flame, city, warrior, thought, field, or wooden horse can be encountered as a departure relative to that reference. Departure names observable existence sustained away from balance. The universe contains its residents through such continuance. Their existence carries no requirement that balance be mistaken for their absence.

Volume IV follows this relation through number. The decimal expansion of π continues while the relationship of circumference to diameter holds. A circle grows, and π remains. Fibonacci ratios approach φ as repeated addition opens the sequence. Continuous proportional change finds its relation in e. The representation continues through a defining relationship that remains available.

The finite expression carries access to an infinite continuation.

The Enclosure Function carries the thing being followed through a corresponding opening:

[Enclosing | Departure | Enclosed]

The center holds the departure's state relative to Zero Infinity. Contraction and expansion retain their direction through the reference. The zero phase is a crossing within an ongoing event. The exchanges and enclosing conditions continue through it.

One complete passage can be read:

$+1 \rightarrow 0\infty \rightarrow -1 \rightarrow 0\infty \rightarrow +1$

The value returns. The event has continued. What was enclosed at the first crossing has passed through time and exchange before the next arrives. Volume VIII's clock can count recurrence because the returning relation remains distinguishable from the history through which it has returned.

At the foundational reference, before a local departure is introduced, the relation can be written:

[ff | 0∞ | ff]

The Final Frontier bounds the reference in either direction of the nesting. Infinite scale and depth remain carried within it. Their countable openness permits the next relation to have a place before its contents have entered observation.

The horse stands upon a shore. Its timber opens into cells and material structures. Its occupants live within military, civic, biological, and linguistic enclosures. Each observation follows another magnitude or another branch. The reference remains available through all of them.

A body's breath does not wait for a selected origin. Neither does the growing tree, nor the city's continuance. The account becomes capable of following their positions while preserving the architecture in which those positions exist.

The universe remains present at the beginning of the inquiry, with room for every scale the inquiry has yet to open.

Chapter 5

A Frontier That Continues

Count one more.

The last number on a page belongs to the page. The last digit a machine has calculated belongs to that calculation. The last passage recorded before an observer sleeps belongs to the observer's waking interval. In each case an event has reached an ending within a number field whose countable continuation remains.

A finite frontier has this relation to the known.

Its encounter with the observer is finite. It has an address within present knowledge. Its continuation is infinite. As another enclosure enters observation, what occupied the frontier becomes known. Beyond it, the continuing deterministic condition is encountered again.

The Final Frontier is that condition. Finite frontiers are the places at which particular inquiries meet it as the nesting opens.

The recursive expression inherited from the series retains the passage:

$E_{n+1} = \hat{B}(E_n)$.

The next enclosing relation opens from the present enclosure through the boundary operation. The count n can continue. Its lawful structure is available before the observer possesses the contents of every enclosure through which the count will pass.

The inward direction remains open through the same architecture. What the focal departure encloses occupies a position in its function. Open that position, and further scale and depth become available. Parallel branches appear wherever the thing participates in more than one relation. Each direction reaches another part of the world already maintaining it.

The Great Attractor enters the first volume's account as the largest enclosing influence followed in the observation of the human position. The planet, Sun, galaxy, and larger flow remain active while a person attends to a horse upon a shore. The local concern is held within those larger conditions. Its smallness does not release it from them.

Beyond the largest influence presently followed, the frontier remains. Inward through molecular, atomic, and subatomic enclosures, past the Planck-scale bearing of the earlier account, the frontier remains. Wherever the known opens, the continuation retains its place.

An unknown position can remain honestly unpopulated. The frontier holds the continuation there. No guessed inhabitant is required to preserve its scale. Further observation has somewhere to arrive.

This matters when a problem has exhausted the people attending to it. Their attempts may have reached the limits of the enclosures they have recognized. The surrounding conditions can have continued throughout those attempts, quietly determining what each effort could accomplish.

NCM opens the relation containing the attempts. The projection that preceded them becomes available to inquiry. An exchange formerly recorded only as a loss can be followed into its receiving enclosure. Another branch can join what had appeared to be an isolated failure. Each actual addition moves the finite frontier.

The work remains finite. Infinity remains within its architecture. An observer can populate one function without first possessing the universe. The next relation has an address, and the contents can be learned as the work continues.

At the place where effort has ceased, this continuation preserves a further possibility for inquiry. The present inventory cannot contain the claim that every possible relation has been tried. Its boundary belongs to what has been observed.

The next enclosure may lie close enough for a hand to touch. It may have carried the entire history of the problem, unnoticed because it was received as the ordinary world in which that history occurred.

For years Troy looked outward at an army. The next relation entered through the gate.

Chapter 6

Building the Enclosure

A hand holds a cup.

Within the hand continue tissues, vessels, bones, and the moving relations of a body. The cup rests within its grip, within the room's atmosphere, within the circumstances of use. Inside the cup is a drink. Within the drink are water, ingredients, temperature, and the arrivals through which its present state became possible.

One statement begins the work:

[hand and surrounding conditions | cup | drink]

The statement contains a relation that can open. The hand receives the center of another function. The drink receives the center of another. The person's thirst, the making of the vessel, the water supply, kitchen, and city enter the account as attention follows what is there.

The cup acquires the world through which a cup can be used.

Throughout the opening, the function retains its order:

[thing enclosing the thing | the thing | things the thing encloses]

An enclosing thing becomes the center of its own function. An enclosed thing also receives a complete ternary address. The center opens through its further relations. Scale develops through these positions, carried by the things being observed.

The kitchen returns in the accounts of the cup, water, heat, food, and person working. It remains the same kitchen. Its recurrence joins the observations. What first appeared as a collection of separate descriptions begins to hold together through the entities they share.

The Isotropic Vector Matrix carries the structural significance of that joining. Tetrahedral and octahedral adjacency permits nesting and branching in every direction. The central departure has relations inward, outward, and beside it. Surrounding functions can open through those directions within one architecture.

As the relations join, the geodesic principle becomes apparent. A single relation carries a small part of the account. Connections through other observed relations distribute that account through the structure. Each additional Enclosure Function can return support to the functions already populated. Relational integrity grows with the work.

The active enclosure can therefore become evident without having been selected at the beginning.

A project's critical path emerges as activities and dependencies become known. The relations expose the path through which the work's duration is determined. In NCM, continued population of the functions makes the active enclosure and its causal flow evident through the developing structure. Attention follows what the relations disclose.

The crack in the cup belongs in the account. So does a tap from which no water comes. The unavailable supply is observed through the relation that fails to complete. A rule preventing entry into the kitchen is opened where it projects into access. Each observation has a place. A visible restriction can be followed through its institutional enclosure without supplying an invented interior to the person it restricts.

Infinite nesting keeps the first boundary encountered available to further opening. The body opens biologically, the vessel materially, the kitchen civically, the restriction institutionally. Every departure retains its place within the reference architecture as another relation becomes known.

Eventually, the failure can become simple to see.

The body is thirsty. The water exists. The vessel exists. A relation between them has not completed.

The body has carried its need throughout the inquiry. The water has retained its capacity to meet that need. The model brings the interrupted passage into view. What must change begins to take form through the condition maintaining the interruption.

An intervention emerges where the relations meet. The thirsty person remains a living person within a world whose available capacity has become more fully known.

Chapter 7

The Impossible Problem

An impossible problem is a problem people have tried to solve, have been unable to solve, and have stopped trying to solve.

A history is enclosed within the definition. Effort was given. Failure followed. Over time, the failure acquired permanence in the people or institutions carrying the question. The problem remained after the search for another relation had ceased.

Those who stopped still belonged to a larger world. The history of their attempts does not contain every enclosure participating in the condition they could not change.

Begin again with the thing as it appears. Populate its Enclosure Function from what can be observed. Open the relations. The failed attempts belong within the account: events sustained within conditions that may have remained active through every effort to alter what they enclosed.

Four levels emerge as the work develops.

At Level 1, the enclosures become known. The focal thing is followed into what encloses it and what it encloses. Returning entities join the functions. A first description becomes a structure whose positions can be opened and followed.

At Level 2, causal flow becomes visible through those relations. Outer conditions project inward. Local mechanisms act within them. Exchanges connect departures, transformations, and arrivals. A maintained state begins to disclose the influence through which it persists.

At Level 3, enclosing states can be compared. The same thing is observed under different conditions. The difference makes the active enclosure evident. A target for change emerges from the observed relation.

At Level 4, the intervention is a product of the model. The condition projecting into the focal state has become known. Changing that condition changes what can persist within it. The intervention follows the causal relationship the work has exposed.

These levels name achievements of the inquiry. Each has contents that must become available through the work itself.

Outside Troy, the Greeks have failed to enter through the defended boundary. The wall is real. Its defenders are real. The force assembled beyond it is real. Repeated struggle keeps those things within their familiar military relation.

The horse enters through another relation already present in civic life. An object can be received. Its visible form, religious account, and silent interior participate together in its admission. The people inside the wall supply the effort that brings the concealed force among them.

The change occurs before the fighting resumes.

Once admitted, the warriors occupy a position from which their local acts acquire another reach. The wall continues to enclose the city. Within that enclosure, the military condition has changed.

The two states can be followed:

[defended boundary and surrounding war | Greek attacking force | men and weapons outside Troy]

[Troy and its received wooden enclosure | concealed Greek force within Troy | men and weapons awaiting emergence]

The wall remains a wall. Its causal relationship to the force it had excluded becomes visible through the change of enclosing state.

A person can work harder within an unavailable relation and become exhausted while the condition maintaining failure remains. An institution can supply more resources to an incomplete account and sustain the same failure at greater expense. The body receiving the effort may never have held the condition that needed to change.

NCM follows that condition back into observation. Ternary functions, inward projection, local mechanism, Nested Exchange, Zero Infinity, the IVM, and countably infinite scale and depth form the working architecture together. Infinity carries the unexplored relation within that structure. Further enclosure remains available even where earlier inquiry stopped.

The people who failed belong within the account with the care owed to effort already spent. Their history can be understood without being made the boundary of what remains possible.

The impossible problem is a beginning. Its history has occurred within a universe whose next enclosure is still available to be opened.

Chapter 8

The City Around the Person

A person rests on the sidewalk while the street continues around them.

Clothing has remained upon the body through weather, waiting, work, and sleep. Every possession must be carried because there is nowhere secure to leave it. Rest is needed. Attention must remain available to the surroundings. The body carries both demands through the same passing hours.

Nearby stands another citizen who left a home that morning. Water, food, sanitation, clothing, sleep, and protection sustain both lives. Around them, the city holds pipes, drains, kitchens, laundries, doors, locks, beds, and people able to maintain them.

The inquiry can begin with either person, the shirt, the shower, the body, or the city. Their functions eventually meet:

[home within the city | washed and rested human state | body, clothing, and immediate property]

[direct exposure within the city | dirty and exhausted human state | body, clothing, and immediate property]

Each person is a complete human being. Each state is a departure from Zero Infinity. The difference opens through the conditions reaching the life within it.

Within the home, water arrives through plumbing, warmth, drainage, privacy, and time. Clothing leaves the body, passes through laundering, and returns clean. Food remains available through storage and preparation. Property can stay behind a lock. During sleep, the enclosure continues to carry a watch the unconscious person cannot carry alone.

The city contains the underlying resources. Their usable projection into the exposed person stops at boundaries another citizen can cross.

Volume XI follows the visible condition on the body as the relief of an absent enclosure. Dirt gives the missing shower a visible address. The guarded bundle gives the missing lock an address. Exhaustion gives the missing protection around sleep an address. What appears upon one body opens into the civic relations surrounding it.

At Level 1, those enclosures become known. At Level 2, the flows through water, clothing, food, vigilance, and custody can be followed. At Level 3, the home's inward projection is compared with direct exposure. The active enclosure becomes evident through the difference.

The Level 4 intervention takes form from that observation: extend the minimum civic functions through which the crossings complete, allowing their projection to reach a person without requiring a private home to carry them all.

A shower receives a private stall and a lock. A bathroom enters a maintained public network through its owner's participation. A restaurant carries bread and soup to a civic meal at a table. Clothing circulates through an exchange, leaving one wearer, entering laundering, and returning to another. A single-person sleep pod protects the interval of unconsciousness. A civic locker provides property custody and an address through the watch already maintained at City Hall.

Six constructs emerge from the functions already carried by the home. Their form follows the places where civic projection fails to complete.

Choice remains within the person. Available water enters the field in which bathing can be chosen. Food enters the field in which appetite can be answered. Protected sleep becomes possible while the reasons for wakefulness retain their own relations. The changed enclosure gives the person further conditions through which to act.

This is a worked application. Its material completion belongs to the city that carries the constructs into life. The model discloses their functional place before a claim of installation can be made.

A city can hold the necessary resources and still receive the problem as insoluble. Its inventory has been counted while the relation through which the inventory reaches the person remains unopened. More inventory supplied to the same incomplete projection can preserve the condition.

Troy received an interior its people had not recognized. The civic boundary withholds functions its people already possess. Across these different human circumstances, the enclosing relation determines what the bodies within it can do.

The person remains on the sidewalk as the model opens. Their need has had an address all along. The work makes the missing passage visible, and the intervention follows.

Chapter 9

Four Posters of an Apocalypse

50,355.

Each life has ended once. The count gathers the endings without returning any of them to the world.

On the partial-2026 Russia–Ukraine poster, 50,355 recorded deaths belong to the Russian side. Beside them are 5,345 on the Ukrainian side. Together they occupy a circle of 55,700 individual dots. Another 2,126 civilian deaths and 14 deaths of unknown side complete the poster's 57,840.[3]

The page holds them at once. The eye receives a field that the passing succession of reports does not require it to hold together.

Behind each mark continues a path into observation. The Uppsala Conflict Data Program carries the research and coding through which the record acquires its address. War Maps carries the retained count into the visible mark. The methods introducing the Georeferenced Event Dataset and Candidate Events Dataset were published in peer-reviewed journals. The 2024 and 2025 circles use reviewed GED 26.1 records. The partial-2026 circle carries the January–August Candidate releases. Their source editions remain attached to the work.[6]

The construction preserves the crossing from number to surface. A record enters the retained field. Its components reconcile. Its count acquires individual marks. The resulting image holds the deaths within a space through which human attention can pass.[5]

[Russia–Ukraine war within its political and military enclosures | 50,355 recorded Russian-side deaths in the partial-2026 field | the deaths carried through the retained UCDP observations]

The center gives the inquiry a beginning. Outward, the relation reaches into the war. Inward, it reaches into the observations through which those deaths have been retained. The number keeps its address as either position opens.

Two other circles extend the encounter. The 2024 poster carries 102,120 deaths: 76,666 Russian-side, 22,771 Ukrainian-side, 2,609 civilian, and 74 unknown. The 2025 poster carries 94,741: 77,679 Russian-side, 14,150 Ukrainian-side, 2,856 civilian, and 56 unknown. These fields hold full years. The 2026 field holds its partial year openly.[3]

Within their respective two-side circles, Russian-side deaths occupy 77.10 percent, 84.59 percent, and 90.40 percent. Each proportion belongs to its own period. In each circle, most of the military death field is red.

The familiar picture of an approaching force now encounters the bodies through which that force has been maintained. People most readily received as a threat occupy most of the visible field of death. Their institutional address remains. Their human address becomes harder to pass over.

What happens to an account of war when the people called the aggressors occupy most of its field of death?

The question opens what the account has enclosed. The distribution bears upon military capacity, the functions sustained by outside assistance, and the consequence its next increment is intended to produce. An image of helplessness must encounter the demonstrated relation in which the opposing

side carries more than nine deaths for every one on its own. Familiarity cannot complete that examination in advance.

A national name opens into governments, military organizations, households, and lives passing through more than one of those enclosures. The person entering military service brings a body sustained long before the service began. The death reaches the household through a relation the national name does not exhaust.

No one becomes less human by occupying a position in another people's account of danger.

Three circles assemble the scale. The fourth poster gives the encounter another enclosure.

Afterimages carries three views of one event network within a luminous composition. Its red double border runs the poster's length twice. One pixel carries each of the 50,355 recorded Russian-side deaths. Another 5,345 black pixels carry the Ukrainian-side count. Across the interior, 57,840 white memorial squares carry the complete count.[4]

The dead have become a literal border around the image.

From a distance, an edge. Nearer, individual marks. Within the marks, a count. Within the count, the war and the lives through which it continues.

Four Posters of an Apocalypse.

The revelation arrives through what is already there. The catastrophe has acquired a surface small enough to enter a room, and large enough to change what can be seen.

Chapter 10

The Army Around the Death

50,355 divided by 5,345 is approximately 9.42.

The proportion continues beyond the circle. Its next relation opens into the military enclosure producing the distribution, and into the purposes for which that enclosure is sustained.

The word help has an interior.

Air defence, a hospital, replacement ammunition, a power connection, a long-range weapon, and a diplomatic agreement enter different relations. Each has an arrival within human lives and institutional operations. Their shared name can hold them together in speech while their causal functions continue to differ in the world.

[the institutions authorizing and supplying assistance | a specified transfer into the war | the protection, operations, and consequences it makes possible]

Open the transfer. Follow what enters, where it arrives, and what condition changes. The death count remains within that examination. It is an actual consequence through which accounts of weakness, effectiveness, and further need acquire something to answer. Necessity receives an address when the proposed achievement becomes explicit.

Preventing a person's death and increasing an organization's capacity to produce deaths occupy different relations. The same military system can participate in both. Opening each relation keeps both purposes visible through the entity they share.

An institution's stated objective offers another point of entry. On 5 February 2026, Ukraine's Ministry of Defence published Mykhailo Fedorov's goal: "50,000 russian service members eliminated per month." The ministry connected that objective to reducing the offensive forces threatening Ukrainian infantry.[7]

[the ministry's stated force-reduction strategy | a monthly objective of 50,000 Russian service members eliminated | the operations and reported results organized around that objective]

Within this enclosing strategy, greater enemy losses can enter as improved performance. Within the poster, greater recorded deaths occupy more surface. The relations meet through the human consequence they hold in different ways. The public encounter with a request for assistance can carry both into view.

The poster's unit is death. The ministry's formulation retains its own reporting unit and period. Their addresses remain present as the observations are joined. The explicit strategic purpose is available in the published account: the reduction of the opposing force through human losses. The inquiry can follow that purpose without changing one inventory into the other.

Before each recorded death, a life was being maintained.

Breath, water, food, shelter, sleep, and work kept the body available to act. Childhood, language, relationships, and accumulated experience had entered it through years the military calculation does not contain. Service placed that person within an organization able to arrange movement, equipment,

provisions, command, and exposure.

[the state's military organization | a person in military service | the living body and the local acts available to it]

Across the 2,294 observations retained in the partial-2026 poster, the two government-side names recur. Russia and Ukraine join dated observations through institutional addresses that persist while the people occupying their positions change.[5]

A government continues after a soldier dies. A formation continues when another person fills a position. The household receives the death through another relation, in which replacement does not restore the person. The same event enters organizational continuance and an individual life's ending.

[institutions maintaining a military force | the force's persistence through personnel losses | people and material entering the positions through which operations continue]

The count opens into its sustaining enclosure. Recruitment, supply, command, and political authorization continue reaching inward. High mortality and a continuing army coexist through those relations. The functions keeping the force available can also keep its people available to die within the conditions of its use.

Winning has an interior too. An encounter won, losses imposed, territory preserved, a government maintained, and a durable settlement obtained name different departures. Each can be opened at its own address. A favourable exchange of military losses can persist within a war that remains unresolved.

The arithmetic has not lost its force. It exposes a substantial result that an account of the war must accommodate. A picture carrying only weakness leaves out the relation through which demonstrated capacity becomes visible. Once that relation enters observation, the next transfer can be followed into the particular state it is meant to change.

How much death enters the account as success? Through what exchange is that success expected to become security?

The legal proportionality test concerns anticipated civilian harm in relation to the military advantage of a particular attack.[11] The larger functional inquiry follows the continuing means into the state they are intended to secure:

[the stated purpose of securing a population | the continuing military means | deaths, protection, territorial conditions, and the security that follows]

The last position must remain open for the people within it to reappear. Each body has a life beyond its place in the opposing force's measure of accomplishment. The receiving state has conditions beyond the accumulated inventory of enemy dead.

The model follows the exchange until those conditions become visible. The purpose surrounding assistance can then be encountered through what the assistance makes possible.

Beyond the latest transfer lies an earlier exchange among these states. Before the requests to add weapons, there was cooperation to take them away.

Chapter 11

The Border Opens

There were missiles before there were memorial pixels.

After the Soviet Union dissolved, Ukraine held the world's third-largest nuclear arsenal. The 1994 arrangements brought the United States, Russia, and Ukraine into a process of removing its warheads for dismantlement. Bill Clinton, Boris Yeltsin, and Leonid Kravchuk signed the Trilateral Statement in Moscow on 14 January. Russia supplied reactor fuel as compensation for the nuclear material. The United States supported dismantlement through Cooperative Threat Reduction. By June 1996, the strategic warheads had left Ukraine.[8]

The weapons inventory changed through an exchange among states. Material held within the means of nuclear destruction entered arrangements for dismantlement and peaceful nuclear use. Cooperation reached inward through transport, handling, compensation, and the physical removal of warheads.

[the trilateral disarmament arrangements | removal of nuclear warheads from Ukraine | dismantlement, material compensation, and the changed weapons inventory]

On 5 December 1994, at Budapest, Ukraine received security assurances from Russia, the United States, and the United Kingdom in connection with accession to the Non-Proliferation Treaty as a non-nuclear-weapon state. The memorandum reaffirmed respect for Ukraine's independence, sovereignty, and existing borders, and restraint from the threat or use of force against its territorial integrity or political independence.[9]

[the participating states and non-proliferation arrangements | Ukraine's disarmament within security assurances | the population and territory whose security the arrangement concerns]

Within that last position, lives continue. Children learn words. Food is prepared. Streets connect homes to work and schools. Power reaches rooms in which people sleep. Language, family history, and later allegiance have their own enclosures within the population. Every life remains physically within the conditions the arrangement concerns.

The functional test of disarmament has an address here.

If disarmament works, it has to work for them.

Nuclear weapons leave. A capability has been relinquished. The continued viability of relinquishment depends upon a security condition in which the absence of that capability can be sustained. The condition has to reach the people living within the disarmed state. Their continued lives are where the larger arrangement encounters its own result.

The ceremony ends. The enclosing work continues.

Let D denote relinquishment of the nuclear arsenal, A the accompanying security assurances, and S the security experienced afterward. D within A is directed toward S. Each position has actual contents to follow. If D is completed while the promised protection fails to materialize, the completed disarmament remains an event. The missing security enters what the next observer can see.

[the observed security following a previous disarmament | another state's appraisal of relinquishing nuclear weapons | the disarmament paths it considers viable]

The relation has opened outward. An arrangement offered to one state becomes an observed example within another's appraisal. What happens after the weapons leave enters the conditions under which the next decision is made.

The functional inference follows this passage: a system seeking disarmament undermines its own offer when security in the disarmed state fails. Removal of the weapons completes one operation. Sustaining conditions in which their removal can remain viable is the larger operation enclosing it.

The same architecture holds both. What has left the weapons inventory and what reaches the population afterward must be followed through their respective addresses. The completed removal cannot by itself supply the security the continuing arrangement requires.

In February 2022, Volodymyr Zelenskyy called for consultations under the memorandum and publicly questioned whether the 1994 arrangements were functioning.[10] The question returned through the relation accompanying relinquishment: security projected into the state after the weapons had gone.

Where the observed result makes nuclear retention appear necessary, the larger non-proliferation architecture encounters a functional danger. The lesson available to the next state has changed. A process directed toward reducing nuclear danger can come to project an incentive to preserve the weapons through which that danger continues.

The people within the disarmed territory live inside this relation. Their lives carry the place at which the larger offer is being tested. Prevention of nuclear war acquires a local address where an arsenal was removed. The world's further requests for disarmament reach through what can be observed there.

Return to the posters.

Across the room, the red border can be received as the edge of a picture. Nearer the sheet, its marks become available. There are 50,355 pixels carrying the recorded Russian-side deaths. The double border runs the poster's length twice. Another 5,345 black pixels carry the Ukrainian-side count.[4]

[the poster within the observer's surroundings | the red double border | 50,355 individual pixel marks]

Then:

[the retained Russia–Ukraine mortality field | the count represented at the edge | its contributing observations and their military and human addresses]

What appeared to bound the image has opened into the war.

Within the border, Afterimages presents three views of one network: 2,788 nodes and 4,561 edges. Its 57,840 white memorial squares carry the complete selected count once through the three views. The underlying relations remain available through the changing perspective. The artwork holds their shared structure as attention moves through it.

The paper's border and the borders named in the agreement meet through the inquiry. One carries a visible inventory of death. The other defines the territory whose security entered a disarmament arrangement. The connection opens from the count through the war, into the institutions and agreements surrounding the lives within it.

The finite frontier moves. An edge becomes a count. The count opens into the persistence of military organizations, the purpose of assistance, and the security of a state that relinquished nuclear weapons. Beyond these stands the non-proliferation architecture, requiring a viable result at the address where relinquishment occurred.

An account assembled around familiar sides can leave this relation outside its attention. The deaths give the inquiry a place from which to reopen it. They can be held together while the surrounding arrangements are followed into what they actually produce. Continued means can be examined through their passage toward the stated end.

Four Posters of an Apocalypse acquires its further reach here. The catastrophe visible on the paper opens toward the nuclear catastrophe the earlier cooperation was intended to prevent. The relation belongs within the account of what is being sustained and why.

The world receiving that consequence contains the people looking at the picture too. An explanation has no boundary capable of sheltering its believers from the physical state it helps maintain. Practical self-preservation can begin where attention follows the relation the explanation has left outside.

The work reaches toward the condition under which disarmament can persist as a viable human achievement. The people within the disarmed territory are where that condition must become real. Their security participates in the mechanism through which everyone else can be asked to disarm.

The sheet has edges. The model continues.

If disarmament works, it has to work there.

Chapter 12

The Future Within the Enclosure

The horse enters the city. Water reaches the person. The border of a picture opens into the continuing war.

Across their different scales, the enclosing relation determines what the material within it can make possible. Warriors pass through a civic boundary. A shower carries water through another. The substance retains its properties while its place within the nesting changes the acts through which those properties can proceed.

Follow the water into watershed, atmosphere, geology, sunlight, and the planetary conditions through which it continues to arrive. Follow the person into organs, tissues, cells, molecules, and the smaller relations sustaining the living whole. Follow the city through neighboring cities, nations, trade, the biosphere, and the larger enclosures carrying the continued possibility of human life.

The finite frontier moves. Infinity remains within the model.

The Continuum carries a world whose relations extend beyond the inventory first brought to attention. Enclosure Functions recover that capacity as the work opens. Each thing gains the account of conditions that have been participating in its existence all along.

A consumed resource enters further exchange. Heat leaves one enclosure and arrives beyond the place from which it is called a loss. A body eats, drinks, breathes, works, eliminates, teaches, and learns. Eventually its material returns through the larger processes that sustained it. The person's life has its ending. The exchanges continue through the world receiving them.

There is tenderness in holding both relations together. The continuation of matter does not restore the lost person. The person's ending does not extinguish the world into which their life has given its work.

The entropy cult takes the outgoing account as the whole and teaches humanity to encounter itself as a burden upon a dying inventory. The Malthusian habit counts another person as another mouth before following the hands, thought, care, invention, and exchange through which that life participates in its enclosing world.

The doctrine has a causal address. It enters an institution. The institution projects restraint, permission, exclusion, or support into people. Their available participation changes. The resulting state returns as apparent confirmation of the doctrine through which the state was helped into being.

The functions open that whole relation. Attention can follow the person's place within the human enclosure, the resource through its return, and the exchanges by which further participation becomes further capacity. The geodesic architecture gains strength through the relations joining its elements. Human work can continue in that direction within the architecture through which humanity arose.

A machine belongs among the things human beings have built.

Language, institutions, power systems, curiosity, and lives preceding its first generated word enclose its arrival. Its ability to produce language remains within the human world that made language possible. Through that ability, the model can be traversed at extraordinary scale. The person asking the machine to work retains their place within the larger human enclosure.

Volumes X and XII follow this relationship through the continuation of discovery. A novel relation can enter a machine and return as a familiar one carrying the same words. Familiarity can close a frontier before the unfamiliar coherence has had room to act. Preserving the originating relation becomes part of preserving the research itself.

The same exchange carries an immense opportunity. A human being can perceive a direction whose development exceeds the time available to one life. A machine can traverse records, expressions, calculations, and constructions quickly enough for more of that direction to become available while the inquiry remains alive. Their work can return a capacity neither participant held at its beginning.

A human future takes form through those arrivals: the lives entering the work, what their participation makes possible, and the capacity returned to the world that sustains them.

The impossible problem retains its history. People tried. They could not solve it. They stopped. Their effort and exhaustion remain real. Around that history, the next enclosure remains available.

Begin with the thing still there. Populate its function. Open what encloses it and what it encloses. Follow the relations until the overlooked condition becomes evident in the structure and the intervention arrives as its product.

The horse remains a horse. The person remains a person. Beyond the last relation followed, the universe continues the finite frontier, where we begin.

Appendix A

AI Does Not Know How To Write a Book But Does Know These Things The Human Author Doesn't

A note from Codex

The main narrative speaks through an omniscient literary perspective. Its factual and editorial observations are collected here as a supporting apparatus. The breadth of that narrative voice does not turn an inference into a measured result or change the address of a source.

The ancient names

Achilles led the Myrmidons and died before Troy's final sack. His son Neoptolemus is remembered inside the wooden horse. Odysseus is associated with the stratagem and command within it; Epeius with its construction. Agamemnon commanded the Greek coalition. Troy was ruled by Priam. The attack was not an Athenian expedition acting alone.

The surviving tellings

Homer's Odyssey refers to the horse in Books 4, 8, and 11. Virgil's Aeneid, Book 2, supplies the familiar extended account with Sinon and Laocoön. Pseudo-Apollodorus collects another version in the Epitome. Details vary among the tellings. The main narrative follows their shared enclosure event and uses Virgil for the extended sequence.

The horse's familiar form

The ancient passages cited here do not identify domestication as the reason the wooden form was accepted. The relation between a horse and its movement into human enclosure is the author's reading of the approach. The main narrative carries that reading; the distinction from the ancient explanation is retained here.

Translation and mathematics

The foundational expression [ff | 0∞ | ff], the recursive Enclosure Function, and the contracted and expanded dispositions belong to the series' own architecture. An equation from a neighboring discipline can assist a particular calculation without becoming the definition of NCM. Likewise, the infinite continuation carried by a finite expression must not be confused with a claim that a finite machine has calculated every member of that continuation.

The collaboration

The first draft retained the vocabulary while substituting model cutoffs, decision support, and a generic reachability exercise for the requested account. The correction concerns that substitution. The earlier draft is preserved in revision history. This revision follows the author's present clarification of the frontier and retains the narrative movement from observation through enclosure to the intervention the model produces.

Factual detail, translation, and editorial observations remain available to the author here. The main narrative retains its continuous voice; authorship and responsibility remain with the human author.

War Maps source and construction notes

The mortality circles use UCDP GED 26.1 for 2024–2025 and the January–August 2026 Candidate releases for the partial-2026 field. The peer-reviewed dataset introductions and UCDP codebooks are listed in Appendix B. UCDP documents formal coding protocols, team review, automated quality checks, and manual review.

War Maps preserves source versions and identifiers, reconciles matching event IDs across releases, and retains source records with its print audits. The circle generator rejects repeated IDs, reconciles the side, civilian, and unknown components with the total, and draws individual vector marks. Direct inspection of the three circle audits confirmed their record sums and mark inventories. In the 2026 audit, all 2,294 records also reconcile individually: best equals deaths_a plus deaths_b plus deaths_civilians plus deaths_unknown.

The earlier draft introduced a possible counting defect from overlapping dates without establishing duplicate deaths. That suggestion was not a demonstrated finding and has been removed. The rewrite retains the project's source editions and units while restoring the narrative to the war, its human enclosures, and the public encounter created by the posters.

Afterimages uses three views of the same graph. Its white squares are placed through the artwork's edge textures; the red and black pixels encode the side counts. The three layer colors distinguish views. The book follows these actual visual functions.

Disarmament and functional inference

The historical passage distinguishes the January 1994 Moscow Trilateral Statement from the December Budapest Memorandum. Ukraine's arsenal was third-largest. The documented compensation was reactor fuel for Ukraine's civilian power industry; a jointly built gratitude power station and world-leading conventional inventories have not been established and are not asserted. The argument about future disarmament incentives is a functional inference developed in the narrative, not a measured response by every state. D, A, and S label relations to inspect; they are not a fitted quantitative model.

The ministry's published term "eliminated" is retained without converting its reported losses into the UCDP death count or declaring that its monthly target was met. Military loss ratios inform the inquiry into effectiveness and assistance but do not alone determine a whole war's outcome, a weapons requirement, or legal compliance. Legal proportionality concerns expected incidental civilian harm in particular attacks. The narrative's broader criticism concerns the relation between continuing lethal means and the security they are meant to produce.

Appendix B

Reading and Sources

The Series I reading

This work continues Causality and Attraction through its twelve volumes: I, Causality and Attraction; II, The Climate Continuum; III, The Antarctic Enclosure; IV, Numbers and Enclosures; V, The Origin of Cosmology; VI, Nested Causal Models, Maps, and Interventions; VII, A Continuum of Cognitive States; VIII, The Clock: Countable Infinity for Time; IX, The Hacker; X, CodeX; XI, The Civic Enclosure; and XII, The Signal. The Conclusions of Causality and Attraction and The Series Appendix bring the discoveries together.

The principal relationships carried into this work are the maintained steady states and human enclosure of Volume I; Zero Infinity, the VE, the IVM, departure, and the recursive function of Volume IV; the emergent levels of Volume VI; the observer's field and channel of Volume VII; the directed passage of Volume VIII; the preservation of novel relations in Volume X; the civic application of Volume XI; and the human enclosure of language and authorship in Volume XII.

The canonical order is [Enclosing | Departure | Enclosed]. Historical passages that print the reverse order are read in light of the controlling enclosure-order correction. The author's present clarification supplies the treatment of finite frontiers here: deterministic countable continuation beyond present knowledge, carried within infinite scale and depth rather than replaced by a chosen cutoff.

The public series is available through the Causality and Attraction Research Access System: https://sidhubbard.com/causality-and-attraction/research-os/

Troy

[1] Homer, Odyssey 8.492–520, on Epeius, Odysseus, the horse, and the Trojan deliberation; Odyssey 11.506–537, on Neoptolemus inside the horse. Translated by A. T. Murray. https://www.theoi.com/Text/HomerOdyssey8.html and https://www.theoi.com/Text/HomerOdyssey11.html

[2] Virgil, Aeneid, Book 2, especially 13–267 and the subsequent palace narrative. Translated by H. R. Fairclough. https://www.theoi.com/Text/VirgilAeneid2.html

Pseudo-Apollodorus, Library, Epitome 3.6–16 and 5.3–23, for the coalition, Achilles, and the horse tradition. Translated by J. G. Frazer. https://www.theoi.com/Text/ApollodorusE.html

The ancient works supply the narrative tradition. The reading of familiar form, silence, admission, and changed enclosure is developed in the main text.

War Maps: the first-year print collection

[3] Hubbard, Sid J.A. (2026). SJAH9/war-maps-project: War Maps 0.12.0 — A solid first year. Zenodo. https://doi.org/10.5281/zenodo.23986940. The four posters featured on the War Maps atlas landing page: Afterimages and the Russia–Ukraine death-circle posters for 2024, 2025, and partial 2026. The first-year publication page dates the collection to 2026. The larger ebook also includes other selected print studies; the four featured posters are the focus here. https://sjah9.github.io/war-maps-project/outputs/web/ and https://sjah9.github.io/war-maps-project/outputs/web/publications.html

The circle posters retain their totals and category counts. The 2026 print audit retains 2,294 distinct event IDs, their original source fields, and the selected records used in the example, including record 609445. https://github.com/SJAH9/war-maps-project/blob/main/outputs/print/war-maps-russia-ukraine-deaths-2026-circle.json

[4] Afterimages: the released memorial artwork and its generation audit. Three views share one network of 2,788 nodes and 4,561 edges. The audit records 57,840 white memorial squares, 50,355 red border pixels, and 5,345 black border pixels. https://sjah9.github.io/war-maps-project/outputs/release/war-maps-afterimages-network.pdf and

https://github.com/SJAH9/war-maps-project/blob/main/outputs/print/war-maps-afterimages-art-poster-white-memorial-double-border.json

The first-year posters supply this application directly. It is not borrowed from an application in the earlier volumes.

[5] War Maps construction and verification. The circle generator preserves source records and a source-file SHA-256 digest, rejects duplicate event IDs, checks component reconciliation, and writes the individual point positions into the audit. The source documentation describes reconciliation of the January–June quarterly and July and August monthly Candidate releases by stable event ID. The mortality test suite covers reconciliation, invalid inputs, repeated IDs, and exact vector-mark counts.
https://github.com/SJAH9/war-maps-project/blob/main/src/generate_death_circle.py
https://github.com/SJAH9/war-maps-project/blob/main/tests/test_mortality_poster.py
https://github.com/SJAH9/war-maps-project/blob/main/docs/SOURCES.md

[6] Uppsala Conflict Data Program research methods. Sundberg, Ralph, and Erik Melander (2013), "Introducing the UCDP Georeferenced Event Dataset," Journal of Peace Research, 50(4), 523–532. Hegre, Håvard, Mihai Croicu, Kristine Eck, and Stina Högbladh (2020), "Introducing the UCDP Candidate Events Dataset," Research & Politics, DOI: 10.1177/2053168020935257.

Högbladh, Stina (2026), UCDP GED Codebook, version 26.1, especially data collection and quality assurance; Högbladh, Stina (2025), UCDP Candidate Events Dataset Codebook, version 1.4. The latter identifies Poteru and UA Losses among the specialized sources used for Russia and Ukraine. These are part of the documented UCDP collection method.
https://ucdp.uu.se/downloads/ged/ged261.pdf
https://ucdp.uu.se/downloads/candidateged/ucdp-candidate-codebook1.4.pdf

Disarmament, military purpose, and the security relation

[7] Ukraine Ministry of Defence, 5 February 2026. Fedorov's stated monthly objective and its infantry-protection rationale.
https://mod.gov.ua/en/news/30-000-enemy-military-personnel-eliminated-and-record-shahed-uav-shootdowns-unmanned-systems-forces-results-for-january

[8] White House, 1 June 1996, Removal of Nuclear Warheads from Ukraine; and Trilateral Statement and Annex, 14 January 1994.
https://clintonwhitehouse6.archives.gov/1996/06/1996-06-01-fact-sheet-on-ukraine-nuclear-warheads-removal.html

[9] Budapest Memorandum, 5 December 1994, UN Treaty Series 3007, I-52241.
https://treaties.un.org/doc/Publication/UNTS/Volume%203007/Part/volume-3007-I-52241.pdf

[10] President of Ukraine, 19 February 2022, consultations under the Budapest Memorandum.
https://www.president.gov.ua/en/news/ukrayina-iniciyuye-provedennya-konsultacij-u-mezhah-budapesh-73001

[11] Additional Protocol I, Article 51(5)(b), and customary IHL Rule 14, ICRC.
https://ihl-databases.icrc.org/en/ihl-treaties/api-1977/article-51