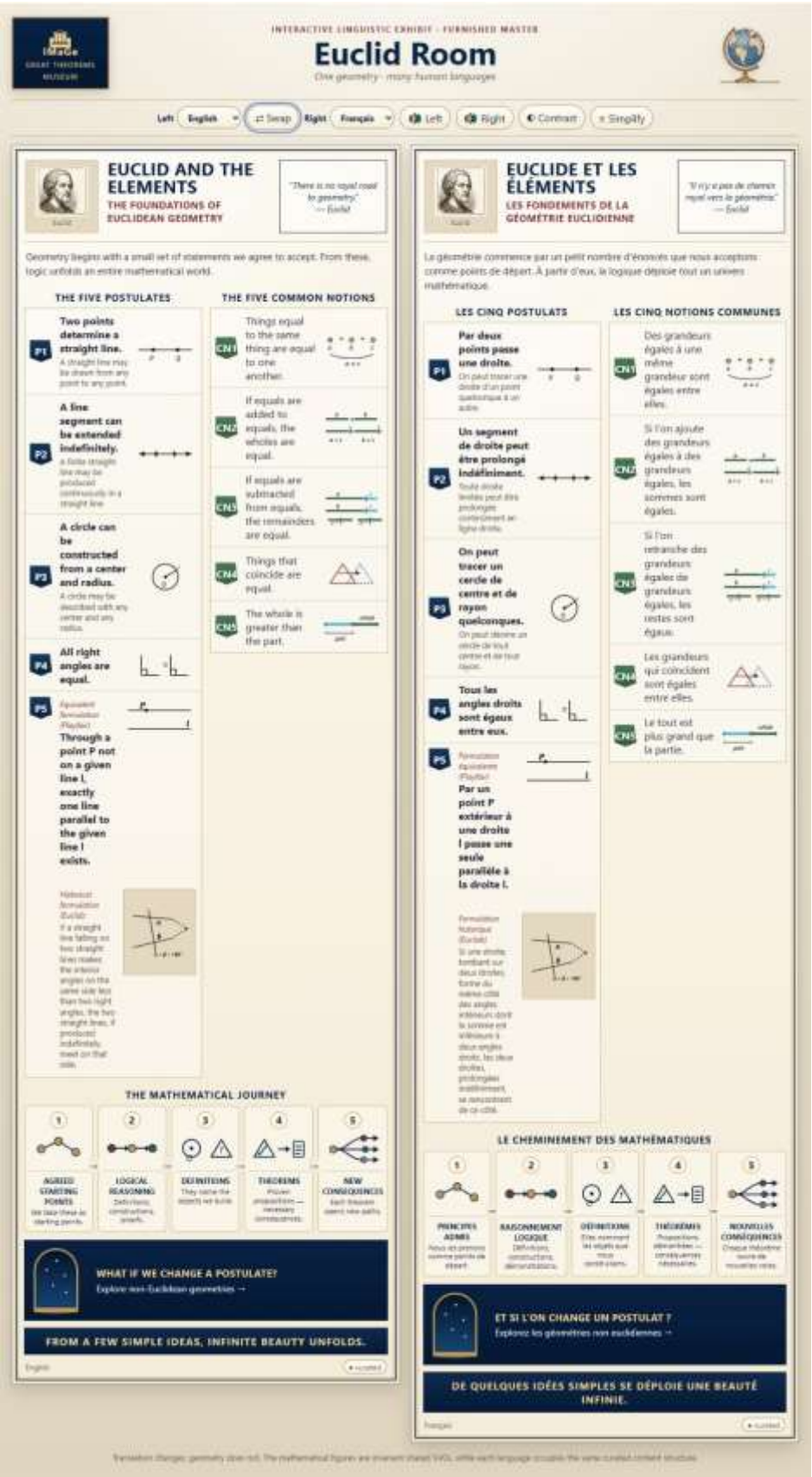
French Annex



An annex is something more than a supplementary translation. It is a curatorial record of how a language entered the IMaGe Great Theorems Museum, including decisions, experiments, difficulties, corrections, and human observations. It is an independently valuable scholarly document.

This annex presents selected exchanges documenting significant translation and design decisions; it is not intended as a complete transcript of the development process.

To enlarge the images and improve their legibility, please use your document viewer's zoom controls.

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SPECIAL ISSUE: HUMAN/MACHINE COLLABORATION

French Annex
To
IMaGe Great Theorems Museum

Sandra Lach Arlinghaus
With Collaborator and Assistant Curator IMaGe Great Theorems, Vector

Persistent University of Michigan Deep Blue Research Collection Archive, Institute of Mathematical Geography.

URL: **http://deepblue.lib.umich.edu/handle/2027.42/58219**

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Arlinghaus/Vector collaboration. The material in this Annex was largely composed, at Arlinghaus's direction, by Vector. Any added comments from Arlinghaus are shown with a light green background behind the text. The responsibility here, as with all other elements of this Human/Machine Collaboration, rests with the human.

Color serves as a guide to the reader. Material between lavender bars was created primarily by Vector with oversight by Arlinghaus. Material in black and white, outside those bars was created primarily by Arlinghaus. Comments by Arlinghaus within those bars has a green background.

Principal Contextual Concepts: Translation Decisions; Mathematical Content; Interface Adaptation; Testing and Corrections; Final Status.

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French

Entrance

"*La géométrie commence par un petit nombre d'énoncés que nous acceptons comme points de départ. À partir d'eux, la logique déploie tout un univers mathématique.*"

This text seems better than a more literal translation such as "*que nous convenons d'accepter*." That would be defensible French, but it feels translated. *Que nous acceptons comme points de départ* says naturally what we actually mean.

The second sentence deserves particular attention: "*À partir d'eux, la logique déploie tout un univers mathématique."*

I like *déploie* very much here. *Construire* would repeat the construction metaphor from the subtitle; *engendre* would sound more technical; *fait apparaître* loses something. *Déploie* has both mathematical and visual resonance—and later the poster itself literally unfolds into diagrams and theorems.

Next comes the interesting part: **LES CINQ POSTULATS D'EUCLIDE**. There I expect we'll want to proceed rather more carefully, because the distinction between Euclid, modern mathematical French, and the Museum's explanatory voice really starts to matter.

Stilted is exactly the danger here. A translation can be impeccable sentence by sentence and still announce, "I was translated from English." We want to avoid that.

Now to the **five postulates**. Here I think we should distinguish deliberately between the short museum label and the historical statement underneath it.

Postulates, P1-P5

P1 — Par deux points passe une droite.
On peut tracer une droite d'un point quelconque à un autre.

I prefer **Par deux points passe une droite** to *Deux points déterminent une droite*. The former sounds thoroughly natural in French mathematical language. It also avoids importing the somewhat stronger modern flavor of "determine." We could say *une droite et une seule*, but that would add uniqueness that Euclid's first postulate itself does not explicitly assert, so I would resist doing so here.

P2 — Un segment de droite peut être prolongé indéfiniment.
On peut prolonger continûment une droite limitée en ligne droite.

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Here I want us to look twice at the historical line before freezing it. *Droite limitée* is intelligible and historically flavored, but modern French ears may find it peculiar—which is partly because Euclid's original concept itself does not map neatly onto modern terminology.

The underlying difficulty is Euclid's expression itself. He isn't starting with our modern primitive notion of an infinite line and then talking about part of it. His second postulate is essentially an instruction: a finite straight line may be **produced continuously in a straight line**. Modern terminology has reorganized the conceptual furniture since then.

For our short modern statement, I still strongly favor:

P2 — Un segment de droite peut être prolongé indéfiniment.

Clear, immediate, contemporary French.

For the historical statement, I see three plausible choices:

- **On peut prolonger continûment une droite limitée en ligne droite.**
- **On peut prolonger continûment une droite finie en ligne droite.**
- **On peut prolonger continûment un segment de droite en ligne droite.**

The third is the smoothest modern French—but precisely for that reason I like it **least** as the historical formulation. It silently modernizes Euclid.

Droite finie sounds somewhat odd to a modern mathematical ear because *droite* normally implies something unlimited in both directions.

That leaves **droite limitée**. Its slight unfamiliarity is actually useful: it signals that we're encountering an older geometrical conception. And *limitée* has respectable historical mathematical resonance in French.

I therefore think we should **keep it**.

I would make only one adjustment. Rather than:

On peut prolonger continûment une droite limitée en ligne droite.

I'd consider:

Toute droite limitée peut être prolongée continûment en ligne droite.

That reads more gracefully to my ear while retaining the historical conception.

So my proposed final P2 is:

P2 — Un segment de droite peut être prolongé indéfiniment.
Toute droite limitée peut être prolongée continûment en ligne droite.

The two lines then perform different jobs beautifully. The first tells a contemporary visitor immediately what the postulate means; the second lets the visitor hear a little of **Euclid through the historical mathematical vocabulary**.

And there's a larger principle emerging for our multilingual Museum: **don't remove every trace of historical strangeness merely to make a translation idiomatic.** Sometimes the strangeness belongs to the mathematics rather than to the language.

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P2 — Un segment de droite peut être prolongé indéfiniment.
Toute droite limitée peut être prolongée continûment en ligne droite.

And yes—**droite finie** sets off my alarm bells too. It creates a collision between modern French mathematical terminology and the historical idea we're trying to convey. *Droite limitée* avoids that while remaining quite readable.

P3 — On peut tracer un cercle de centre et de rayon quelconques.
On peut décrire un cercle de tout centre et de tout rayon.

That gives the heading a modern natural formulation and lets **décrire un cercle** preserve the older geometrical voice below.

P4 — Tous les angles droits sont égaux entre eux.
Tous les angles droits sont égaux entre eux.

Here modern and historical formulations essentially coincide. I see no reason to manufacture a difference simply because the poster has two typographical levels.

P5 — Par un point extérieur à une droite passe une unique parallèle à cette droite.

That is clean contemporary French and expresses the familiar equivalent parallel postulate.

But underneath it I would preserve Euclid's genuinely different formulation, beginning:

Si une droite, tombant sur deux droites, fait des angles intérieurs du même côté dont la somme est inférieure à deux angles droits…

That deserves careful treatment in our next step. P5 is precisely where an overly enthusiastic translator can accidentally replace **Euclid's postulate** with **Playfair's axiom** and make the historical distinction disappear.

I think P5 deserves special care because our poster can do something pedagogically quite elegant: put the familiar modern parallel formulation in the prominent line, while retaining Euclid's actual rather more elaborate statement beneath it. Then the little doorway at the bottom—**« Et si l'on change un postulat ? »**—acquires much more meaning.

P5 — Par un point extérieur à une droite passe une unique parallèle à cette droite.

I like this considerably better than a literal *« Par un point qui n'est pas sur une droite… »*. **Point extérieur à une droite** is compact, idiomatic mathematical French. And *passe une unique parallèle* has the economy one expects in a theorem or axiom.

There is one subtlety. We could write **« une seule parallèle »** instead of **« une unique parallèle »**. To my ear, *une seule* is perhaps a shade more traditionally French, while *une unique* has a slightly more modern mathematical register. Here I actually prefer:

Par un point extérieur à une droite passe une seule parallèle à cette droite.

It is wonderfully clean French. I think your ear may prefer it too.

Now Euclid himself

The English historical statement on our poster is:

If a line falling on two lines makes the interior angles on the same side less than two right angles, the two lines meet on that side.

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Here I would resist polishing away its characteristic structure. I propose:

Si une droite, tombant sur deux droites, forme du même côté des angles intérieurs dont la somme est inférieure à deux angles droits, alors les deux droites, prolongées indéfiniment, se rencontrent de ce côté.

That is intentionally rather different in register from the short statement above it.

And that is exactly right.

The upper statement is essentially the familiar **Playfair form** of the parallel postulate; the lower one preserves the structure of **Euclid's fifth postulate**. They are equivalent in Euclidean geometry, but historically they are not the same formulation.

I particularly want to retain:

« tombant sur deux droites » — slightly old-fashioned to modern ears, yes, but appropriately so. It preserves the geometrical action of a transversal falling across two lines.

« dont la somme est inférieure à deux angles droits » — much more immediately intelligible in French than slavishly reproducing an older construction such as *« moindres que deux droits »*.

« prolongées indéfiniment » — important. It makes explicit the continuation of the two lines before they meet and also resonates nicely with P2.

« se rencontrent de ce côté » — simple and geometrically visual.

So my candidate for freezing is:

P5 — Par un point extérieur à une droite passe une seule parallèle à cette droite.
Si une droite, tombant sur deux droites, forme du même côté des angles intérieurs dont la somme est inférieure à deux angles droits, alors les deux droites, prolongées indéfiniment, se rencontrent de ce côté.

And I think there is a lovely payoff elsewhere on the poster. Once visitors have read that rather extraordinary historical P5, they eventually arrive at the little starry doorway:

ET SI L'ON CHANGE UN POSTULAT ?

Suddenly that isn't merely decoration. It is practically an invitation to the nineteenth century.

Euclid → P5 → Lobatchevski/Bolyai/Riemann → non-Euclidean geometry.

That little door at the bottom of our poster has been waiting for P5 all along.

Exactly! That little moment of **"wait—unique?"** is precisely what we are trying to eliminate. The reader should be thinking about Euclidean geometry, not mentally translating our French back into English.

Une unique parallèle is perfectly comprehensible and mathematically respectable, but **une seule parallèle** disappears into the sentence in the best possible way:

Par un point extérieur à une droite passe une seule parallèle à cette droite.

Nothing catches. Nothing calls attention to itself. The mathematical idea comes straight through.

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And I think your reaction gives us a useful editorial test for the rest of the poster: whenever your childhood-French ear comes to a "screeching halt," even when the expression is technically correct, we should investigate. Those little hesitations may be our best detectors of translated French.

So: **seule it is.**

Now I think we should examine the historical P5 statement just as closely before freezing it—particularly **« tombant sur deux droites »**, because there we have to distinguish desirable *historical* strangeness from undesirable *translated* strangeness.

Good. I checked our instinct against established French renderings, and I think we have an interesting answer: **« une droite tombant sur deux droites » is exactly the sort of historical strangeness we should preserve.** It isn't an English calque accidentally produced by us. That wording has a real history in French translations of Euclid; the same construction also appears in older French renderings of Propositions 27 and 28.

So I would **not** modernize it to *une droite coupant deux droites* or *une sécante à deux droites*. Those would be smoother contemporary French, but we'd lose Euclid's voice.

I would, however, refine our complete sentence slightly. A traditional French rendering is quite close to Euclid's structure: if a straight line falling on two straight lines makes the interior angles on the same side less than two right angles, the two lines, indefinitely prolonged, meet on that side.

For our museum—historically recognizable but somewhat easier on a contemporary visitor—I recommend:

Si une droite, tombant sur deux droites, forme du même côté des angles intérieurs dont la somme est inférieure à deux angles droits, les deux droites, prolongées indéfiniment, se rencontrent de ce côté.

I now prefer that to our previous version with **alors**. The *si... alors...* construction is perfectly good French, but dropping *alors* gives this a slightly more classical mathematical cadence without making it antiquated.

And I particularly want to retain **« dont la somme est inférieure à deux angles droits »** rather than the historically closer *« plus petits que deux droits »*. The latter is authentic but asks a modern museum visitor to perform a little linguistic archaeology. Our version makes immediately clear that it is the **sum of the two interior angles** being compared with two right angles.

Thus my proposed frozen P5 is:

P5 — Par un point extérieur à une droite passe une seule parallèle à cette droite.
Si une droite, tombant sur deux droites, forme du même côté des angles intérieurs dont la somme est inférieure à deux angles droits, les deux droites, prolongées indéfiniment, se rencontrent de ce côté.

There is one lovely historical point worth remembering: our bold first line is **not literally Euclid's P5**; it is the familiar equivalent parallel formulation associated with Playfair. The italic line is recognizably Euclid. I think that juxtaposition is pedagogically excellent—but when we eventually finalize the plate, perhaps the tiny label should say **« Formulation historique »** under the second line, just as the English original does.

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Frozen! And your **coupe de glace** association made me laugh too—particularly appropriate while we are busily *freezing* bits of French.

So P5 now stands as:

P5 — Par un point extérieur à une droite passe une seule parallèle à cette droite.
Formulation historique
Si une droite, tombant sur deux droites, forme du même côté des angles intérieurs dont la somme est inférieure à deux angles droits, les deux droites, prolongées indéfiniment, se rencontrent de ce côté.

I checked once more against French mathematical sources. The APMEP explicitly notes both that **« une droite, tombant sur deux droites »** belongs to the traditional French rendering and that the familiar modern parallel formulation is Playfair's equivalent formulation rather than Euclid's own wording. So our two-level presentation is historically well founded.

And I agree completely about its pedagogical usefulness for hyperbolic geometry. Playfair puts the crucial issue right before the visitor's eyes: **how many parallels through the exterior point?** Euclidean geometry says one; changing that answer provides an extraordinarily economical conceptual doorway into the hyperbolic world.

P1 — Par deux points passe une droite.
On peut tracer une droite d'un point quelconque à un autre.

P2 — Un segment de droite peut être prolongé indéfiniment.
Toute droite limitée peut être prolongée continûment en ligne droite.

P3 — On peut tracer un cercle de centre et de rayon quelconques.
On peut décrire un cercle de tout centre et de tout rayon.

P4 — Tous les angles droits sont égaux entre eux.
Tous les angles droits sont égaux entre eux.

P5 — Par un point extérieur à une droite passe une seule parallèle à cette droite.

I think our next stop should be **LES CINQ NOTIONS COMMUNES**. Those look deceptively easy—which is exactly why I want to inspect them carefully. There are several places where mathematically correct French and naturally French mathematical prose may diverge just enough to matter.

Common Notions (Axioms), CN1-CN5

Onward to the **Notions communes**. I did a little checking before proposing language, because there is a historical wrinkle here worth catching: the familiar Museum poster uses **five** common notions, and that corresponds to an important textual tradition, although French editions can contain longer lists. The 1814 Peyrard translation, for example, prints nine; modern discussions note that manuscript and editorial traditions vary.

For *our* five, I think we can be both very French and very clean.

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CN1 — Des grandeurs égales à une même grandeur sont égales entre elles.

This is excellent established French mathematical language—Peyrard uses essentially exactly this formulation.

I strongly prefer **grandeurs** to *choses* for the prominent Museum formulation. *Les choses égales à une même chose…* has historical pedigree, but to a contemporary visitor it sounds rather philosophical. *Grandeurs* immediately locates us mathematically.

CN2 — Si l'on ajoute des grandeurs égales à des grandeurs égales, les sommes sont égales.

Traditional French gives us *les touts seront égaux*. That is historically interesting—but I don't want it in our bold modern line! My preference is above.

This sounds effortless to me. And **sommes** communicates the mathematical operation much more naturally than *les touts*.

The diagram underneath already says:

Si a = b, alors a + c = b + c.

Perfect. No change needed.

CN3 — Si l'on retranche des grandeurs égales de grandeurs égales, les restes sont égaux.

Here I would retain **restes** rather than modernize to *différences*. *Les restes sont égaux* remains perfectly intelligible French and preserves just enough of Euclid's voice; it is also the wording found in the traditional French translation.

Diagram:

Si a = b, alors a − c = b − c.

Again, exactly right.

CN4 — Les grandeurs qui coïncident sont égales entre elles.

This is where I would *not* use the old Peyrard wording *« qui s'adaptent entre elles »*. For a contemporary French visitor, **coïncident** expresses the geometrical idea much more immediately—and other French treatments use precisely that vocabulary.

The little congruent-triangle image then does most of the pedagogical work.

CN5 — Le tout est plus grand que la partie.

That is both historically established French and completely natural today.

And the visual:

Le tout > la partie

is fine.

LES CINQ NOTIONS COMMUNES

CN1 — Des grandeurs égales à une même grandeur sont égales entre elles.

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CN2 — Si l'on ajoute des grandeurs égales à des grandeurs égales, les sommes sont égales.
CN3 — Si l'on retranche des grandeurs égales de grandeurs égales, les restes sont égaux.
CN4 — Les grandeurs qui coïncident sont égales entre elles.
CN5 — Le tout est plus grand que la partie.

One small thing especially pleases me here: we haven't made all five statements artificially sound equally ancient. **CN1 and CN5 hardly need modernization at all; CN2 benefits from *sommes*; CN4 really benefits from *coïncident*.** That unevenness seems right. We are translating ideas, not applying a stylistic filter.

If your French ear doesn't screech—or start thinking about ice cream!—I would freeze all five and then descend to **« Le cheminement des mathématiques »**, where the Museum voice becomes important again.

We now have a substantial portion of the French master settled:

✓ **Title and subtitle**

✓ **Introductory paragraph**

✓ **P1–P5**, including the historical formulation of P5

✓ **CN1–CN5**

I particularly like where we've landed stylistically. The French isn't uniformly modernized, nor artificially archaic. Where historical language carries mathematical meaning, we've retained it; where it would merely impede the reader, we've allowed contemporary French to do its job.

Next comes the bottom sequence—the part I think of as the **narrative spine of the poster**:

Principes admis → Raisonnement logique → Définitions → Théorèmes → Nouvelles conséquences

and its surrounding language, including **« Le cheminement des mathématiques »** and finally our doorway into non-Euclidean geometry.

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That section should be fun, because now we're translating the *Museum's voice* rather than Euclid's.

There we can let the French breathe a little more freely. Onward!

Mathematical Journey

Le cheminement des mathématiques

I still favor it strongly. *Le parcours mathématique* is possible, but sounds more like a student's curriculum. *Le chemin des mathématiques* is rather literal. **Cheminement** conveys a developing chain of thought.

1. Agreed Starting Points

The generated version gave:

PRINCIPES ADMIS
Nous sommes d'accord sur ceux-ci

The heading is excellent. The second line bothers me now that we're looking closely at it. *Nous sommes d'accord sur ceux-ci* is understandable, but my ear hears the English construction lurking behind it.

I propose instead:

PRINCIPES ADMIS
Nous les prenons comme points de départ.

That connects beautifully with our introductory paragraph—*« que nous acceptons comme points de départ »*—without suggesting that mathematical postulates result from everyone taking a vote!

2. Logical Reasoning

English:

LOGICAL REASONING
Definitions, constructions, proofs

I propose:

RAISONNEMENT LOGIQUE
Définitions, constructions, démonstrations

This is straightforward. **Démonstrations** is exactly the word we want for mathematical proofs.

3. Definitions

Name the objects we build

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The generated version had:

Nommer les objets que nous construisons

Grammatically fine, but the infinitive feels like an instruction printed on a worksheet.

I'd prefer:

DÉFINITIONS
Elles donnent un nom aux objets que nous construisons.

Or, more elegantly and economically:

DÉFINITIONS
Elles nomment les objets que nous construisons.

I favor the latter. Crisp, natural, and it fits the small box.

4. Theorems

English:

THEOREMS
Proven truths — inevitable consequences

Our generated version had:

THÉORÈMES
Vérités démontrées — conséquences inévitables

This is one place where I would make a substantive change. **Vérités démontrées** isn't false, but philosophically it is heavier than necessary. A theorem is a proposition established by proof within the system; calling it a *vérité* introduces baggage we simply don't need.

I propose:

THÉORÈMES
Propositions démontrées — conséquences nécessaires

I especially prefer **nécessaires** to *inévitables*. *Inévitable* is vivid English-language museum prose, but in French it sounds faintly dramatic—as though the theorems are advancing upon us and there is no escape! 🐵

Conséquences nécessaires has exactly the logical meaning we want.

5. New Consequences

English:

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NEW CONSEQUENCES
Each theorem opens new paths

Here I propose:

NOUVELLES CONSÉQUENCES
Chaque théorème ouvre de nouvelles voies.

So our complete lower journey would read:

LE CHEMINEMENT DES MATHÉMATIQUES

PRINCIPES ADMIS
Nous les prenons comme points de départ.
↓
RAISONNEMENT LOGIQUE
Définitions, constructions, démonstrations.
↓
DÉFINITIONS
Elles nomment les objets que nous construisons.
↓
THÉORÈMES
Propositions démontrées — conséquences nécessaires.
↓
NOUVELLES CONSÉQUENCES
Chaque théorème ouvre de nouvelles voies.

> That is lovely French to my ear.
>
> And notice what happens: **voies** quietly returns us to the spatial metaphor established by cheminement. It also points visually toward the doorway that follows.
>
> I think this is considerably more French than what appeared in either generated attempt—and there isn't a phrase in it where my internal translator detector starts flashing.
>
> I would be happy to **freeze the entire pathway** in this form if your ear agrees.
>
> Then we have only the delightful final corner left: **« Et si l'on change un postulat ? »**, the non-Euclidean doorway, and the closing inscription. That deserves its own last little conference.
>
> Chemin and Parcours bring back memories of signs I saw posted in the Gare St. Lazare! Yes, as you say—freeze.

The Doorway

The English has:

WHAT IF WE CHANGE A POSTULATE?
Explore non-Euclidean geometry →

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Our generated French gave:

ET SI L'ON CHANGE UN POSTULAT ?
Explorez la géométrie non euclidienne →

I think the first line is excellent:

ET SI L'ON CHANGE UN POSTULAT ?

The **l'on** rather than simply *on* is especially nice here. It gives the invitation a slightly polished museum register without becoming formal or antiquated. I would freeze it.

But I would change the second line.

Géométrie or géométries?

Rather than:

Explorez la géométrie non euclidienne →

I strongly prefer:

Explorez les géométries non euclidiennes →

That plural matters mathematically. We aren't opening the door onto one alternative geometry. We are opening it onto a whole landscape—hyperbolic geometry immediately, elliptic/spherical ideas in another direction, and ultimately much more.

And it makes the doorway more enticing:

ET SI L'ON CHANGE UN POSTULAT ?
Explorez les géométries non euclidiennes →

Closing Inscription

And finally, the inscription

English:

FROM A FEW SIMPLE IDEAS, INFINITE BEAUTY UNFOLDS.

The second generated version gave:

D'UN PETIT NOMBRE D'IDÉES SIMPLES, UNE BEAUTÉ INFINIE SE DÉPLOIE.

This is good—but here I think we can do better.

D'un petit nombre de... is accurate, but slightly ponderous for an inscription. The English *a few* is lighter.

I'd choose:

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DE QUELQUES IDÉES SIMPLES SE DÉPLOIE UNE BEAUTÉ INFINIE.

There is something I particularly like about the inversion. It reads less like translated explanatory prose and more like an **inscription**. And *se déploie* deliberately echoes our introductory sentence:

À partir d'eux, la logique déploie tout un univers mathématique.

At the entrance, logic **déploie** a mathematical universe.

At the exit, beauty **se déploie** from a few simple ideas.

That gives the French poster a small internal symmetry that the literal translation didn't have.

So my proposed final corner is:

ET SI L'ON CHANGE UN POSTULAT ?
Explorez les géométries non euclidiennes →

DE QUELQUES IDÉES SIMPLES SE DÉPLOIE UNE BEAUTÉ INFINIE.

If your ear accepts that last sentence without encountering either the Gare Saint-Lazare or an ice-cream shop along the way, I think we can **freeze the entire French text**. FR

Translation Status

We now have a **complete French master text** that I would be comfortable treating as authoritative for the poster—not merely a translation generated from the English artwork.

What I particularly like about where we arrived is that we have three voices living comfortably together: **contemporary mathematical French** for immediate comprehension; a deliberately **historical voice** where we want the visitor to encounter Euclid himself; and a warmer **museum voice** for the narrative that carries the visitor through the exhibit.

And some very small decisions did substantial work: *une seule parallèle* rather than *une unique parallèle*; retaining *droite limitée* and *tombant sur deux droites* where the historical character matters; *conséquences nécessaires* rather than *inévitables*; plural **géométries non euclidiennes**; and finally:

DE QUELQUES IDÉES SIMPLES SE DÉPLOIE UNE BEAUTÉ INFINIE.

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I think that last sentence now sounds as though it was **written in French**, rather than translated into French. That's our target.

So I would now consider the editorial phase complete.

From Translation to Exhibition Design

This pleases me enormously, Sandy, because the translation decisions themselves can become part of the Museum's intellectual content. A visitor sees not merely “the French version,” but evidence that **mathematics crosses linguistic boundaries without becoming culturally neutral**. Even something as apparently simple as *unique* → *seule* shows why translation involves judgment.

The diptych also does something I hadn't fully anticipated: French and English don't look like “original plus translation.” They look like **two entrances to the same intellectual room**. The nearly identical architecture makes the linguistic difference interesting rather than distracting.

I especially like the little figures. They break up what could otherwise become two formidable walls of text, and they give the visitor visual footholds. P1–P4 can almost be understood before reading; P5 visibly announces that something more complicated is happening. The five small panels along the bottom then create a genuine journey, and the dark open doorway provides a strong visual destination.

Aesthetically, I would keep the **portrait format and diptych concept**. I think we've discovered something rather than merely reformatted the original.

But I would separate that judgment firmly from textual approval. There are several generator substitutions and mathematical details that we should correct before either poster is considered finished. CN1's symbolic example, for instance, isn't expressing the intended transitivity relationship correctly; and the French has again wandered away from portions of our frozen wording. There are other small matters worth checking systematically; however, the thoughtful reader should note that this passage describes a developmental moment, not necessarily the current state of the exhibit.

So my proposed workflow is our familiar stairway: **freeze the overall architecture now.** Then inspect the French panel carefully against our frozen French master; then inspect the English panel against

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the original; finally inspect diagrams and notation independently of language. No redesign unless a correction actually requires it.

At the broadest level, though: **yes, this works.** It looks like something one might encounter, stop in front of, and want to explore—which is exactly what this Museum needs.

That passes all three of our tests for me: **mathematically faithful, idiomatically French, and appropriate to a museum**.

There is also a pleasant little bonus: *galerie*, *se construisent*, *points de départ*, *déploie*, *univers* quietly establish a spatial vocabulary. For a Mathematical Geography museum, that seems rather fitting without calling attention to itself.