

ANCIENT LANGUAGES AND DH

AN ANNOTATION TOOL FOR TEACHING AND LEARNING

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Humboldt-Universität zu Berlin



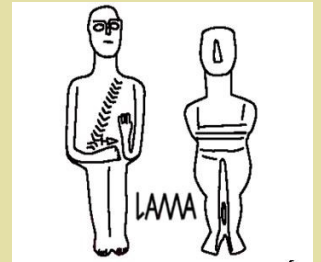
EUPORIA



CoPhiLab
Institute of
Computational
Linguistics, CNR Pisa



LAMA,
Laboratorio di
Antropologia del Mondo
antico, Università di Pisa



This collaboration aims to enhance the synergy between Classic Studies and DH by the creation of digital tools for ancient languages learning

OUTLINE

1. EUPORIA: main features

2. EUPORIA in PhD projects

- Euporia RAGT
- Euporia LanGT

3. Teaching with EUPORIA:

- 1° year students, University of Pisa
- Secondary school- Liceo Classico

EUPORIA main features

USER CENTRED

Domain specific language

Flexible syntax:

- Different layers of annotation
- Textual variants
- Continuous passages (...)
- Discontinuous passages (~)



The tagset is converted into TEI-XML by a parser

Passages of the original text are converted in a CTS-URI

Χορός

68 τὼς καὶ ἐγὼ φιλόδου-
69 τος Ἴαονίοισι νόμοισι
70 δάπτω τὰν ἀπαλὰν
71 Νειλοθερῆ παρειὰν
72 ἀπειρόδακρύν τε καρδίαν.
73 γοεδνὰ δ' ἀνθεμίζομαι
74 δειμαίνουσα φίλους, τᾶσδε φυγᾶς
75 ἀερίας ἀπὸ γᾶς
76 εἶ τις ἐστὶ κηδεμῶν.

```
1 * 69 Ἴαονίοισι νόμοισι : #ontology νόμος is pasture . #ontology  
   Ἰαόνιος is sea . #evidence this_Ἰαόνιος is_referred_to  
   land_of_Ionia; is_related_to Io . Ἰαόνιος is musical_lament .  
   @bibl: Psellus_De_Trag .  
2 * 73 γοεδνὰ...ἀνθεμίζομαι: #ontology ἀνθεμίζω is picking_flowers;  
   #evidence is_related_to virginity . #association ἀνθεμίζω_γοεδνὰ  
   is_associated_to, rape, virginity . This ἀνθεμίζω_γοεδνὰ is  
   related_to Io, pasture, cattle .  
3 * 75 ἀερίας ~ γᾶς: @v1: 1 Ἀερία conj_by Page . #ontology ἀερία_γῆ is  
   Egypt . #association ἀερία is_associated_to mist, sailing .  
4  
5  
6  
Save
```

EUPORIA in PhD PROJECTS



Euporia RAGT

RITUALS IN ANCIENT GREEK TRAGEDY
(G. Mugelli)

Euporia LanGT

LANDSCAPES IN GREEK TRAGEDY
(G. Re)



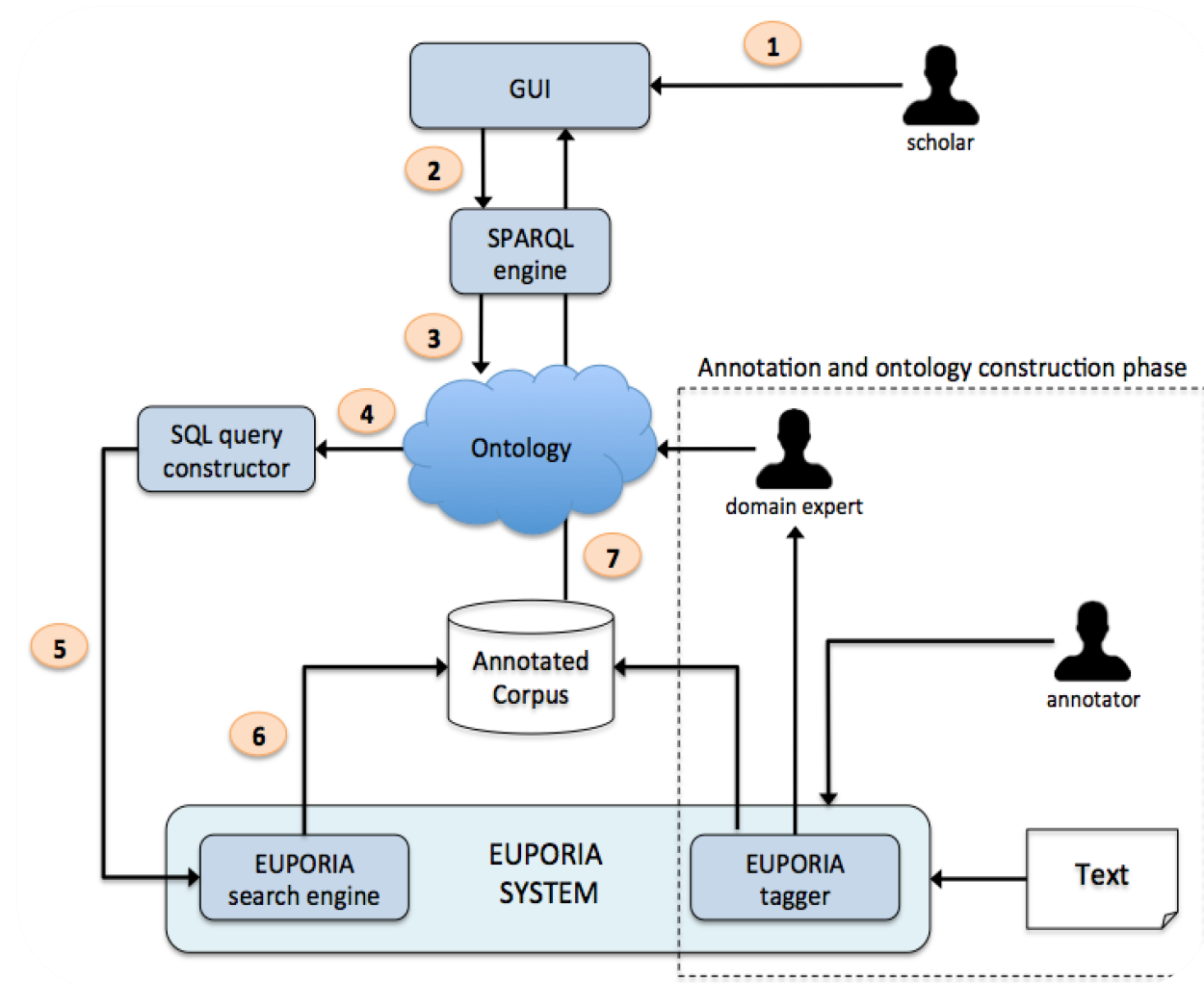
EUPORIA RAGT

- Support for a PhD research in Anthropology of ancient Greece, on the **forms and functions of rituals** in the corpus of Greek tragedy of V cent. b.C.

- The thematic annotation shows crossed references to dynamics of tragic ritual actions and elements of the staging

The screenshot displays a web browser window with the URL `cophilab.ilc.cnr.it:8080/euporiaweb/`. The page title is "Aeschylus, Agamemnon". The main content is a digital edition of the Greek text of the play, with a search bar at the top containing "Aeschylus, Agamemnon". The text is presented in a two-column format. The left column contains the original Greek text, and the right column contains thematic annotations in Italian, each preceded by a line number in brackets. The annotations include terms like `#victimam_iugulare`, `#hominem_sacrificare`, `#virginem_sacrificare`, `#victima`, `#agalma`, `#virgo`, `#miasma`, `#manus_polluere`, `#sanguis_fluens`, `#sphage`, `#sanguinem_effundere`, `#ad_sacrificium_stare`, `#apud_altaria_stare`, `#culpa`, `#ritus_propositum`, `#sacrificium`, `#thysia`, `#sanguinem_effundere`, `#victima`, `#virgo`, `#iustitia`, `#themis`, and `#animus_sacrificantis`. At the bottom of the page, there are buttons for "Save" and "Show HTML".

- Bottom-up approach: no need for a predetermined tagset
- The originally unstructured tags are structured in a domain ontology, modelled on the features of ritual practices.
- QuerySPARQL system, to do complex research on the ontology
- querySQL, to do queries in the annotation database (ongoing)



EUPORIA LanGT

PhD research in Anthropology of ancient Greece, on the the religious aspects of landscape in the corpus of Greek tragedy of V cent. b.C.

Ἰππόλυτος

73 σοὶ τόνδε πλεκτὸν στέφανον ἐξ ἀκηράτου
74 λειμῶνος, ᾧ δέσποινα, κοσμήσας φέρω,
75 ἐνθ' οὔτε ποιμὴν ἀξιοῖ φέρβειν βοτὰ
76 οὔτ' ἤλθέ πω σίδηρος, ἀλλ' ἀκήρατον
77 μέλισσα λειμῶν' ἠρινὴ διέρχεται,
78 Αἰδῶς δὲ ποταμίαισι κηπεύει δρόσοις,
79 ὅσοις διδακτὸν μηδὲν ἀλλ' ἐν τῇ φύσει
80 τὸ σωφρονεῖν εἴληχεν ἐς τὰ πάντ' αἰεί,
81 τούτοις δρέπεσθαι, τοῖς κακοῖσι δ' οὐ θέμις.
82 ἀλλ', ᾧ φίλη δέσποινα, χρυσέας κόμης
83 ἀνάδημα δέξει χειρὸς εὐσεβοῦς ἄπο.
84 μόνῳ γάρ ἐστι τοῦτ' ἐμοὶ γέρας βροτῶν
85 σοὶ καὶ ξύνειμι καὶ λόγοις ἀμείβομαι,
86 κλύων μὲν αὐδῆς, ὄμμα δ' οὐχ ὄρων τὸ σόν.
87 τέλος δὲ κάμψαιμι' ὥσπερ ἠρξάμην βίου.

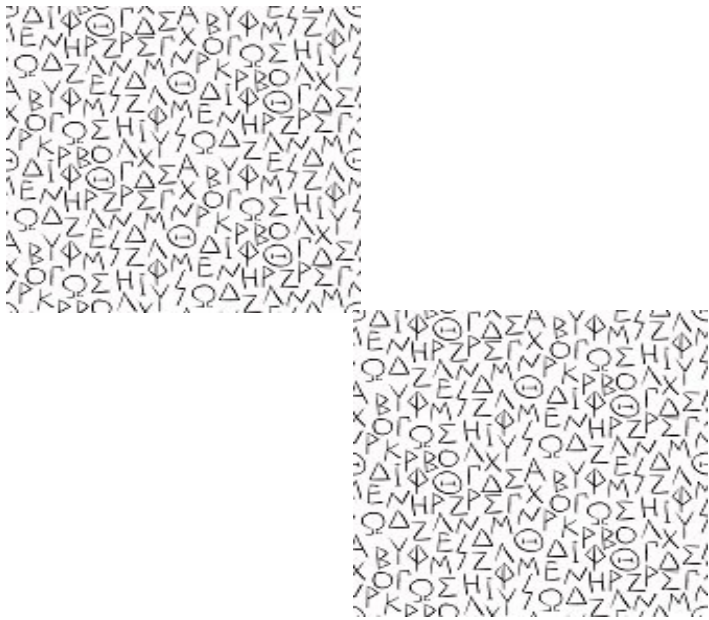
```
10 * 77 ἠρινὴ : @v1:77_1 ἠρινὸν conj_by Paley .
11
12
13 * 78 Αἰδῶς : Αἰδῶς is_a personification . #ontology is_related_to
    youth . #ontology youth is_sacred_to Artemis . #ontology youth
    is_associated_to femininity @bibl:Vernant1987 . #association Αἰδῶς
    is_associated_to femininity @bibl:Cairns1993 .
14
15 * 78 ποταμίαισι ... δρόσοις : #ontology ποτάμια_δρόσος is_a
    fluid_element . fluid_element is_related_to fertility . #ontology
    fertility is_sacred_to Aphrodites @bibl:Pironti2007 .
16
17 * 78 κηπεύει : #evidence κηπεύω is_done_by Αἰδῶς . Αἰδῶς is_related_to
    youth . youth is_sacred_to Artemis . #ontology κηπεύω is_done_by
    fluid_element . fluid_element is_related_to fertility . #ontology
    fertility is_sacred_to Aphrodites @bibl:Pironti2007 .
18
19 * 81 δρέπεσθαι : #evidence δρέπω is_a ritual_action ; is_dedicated_to
    Artemis . #ontology is_related_to flower . #association δρέπω
    is_associated_to picking_flower , initiation_of_virgins ,
    ritual_rape @bibl:hHomDem514 . picking_flower is_sacred_to
    Aphrodite ; is_related_to flower . initiation_of_virgins
    is_sacred_to Aphrodite . ritual_rape is_sacred_to Aphrodite @bibl
    :Bremer1975 .
```

LanGT has a *semi-structured* language of annotation:

- #evidence: marks landscapes explicitly present in the text
- #ontology: marks ontologic relations
- #association: marks the notions and categories of V cent Greek thought.
- @bibl: secondary literature
- @v1: *varia lectio*, salient for the annotator's research purposes

EUPORIA

Teaching ancient Greek



Laboratory of Greek Language
1° year students, University of Pisa

Liceo Classico «Gargallo», Siracusa
Liceo Classico «Galilei», Pisa



ANNOTATION:

Stylistic (#enjambements, #tmesis);

Greek dialects (#forma_ionica); Formularity (#formula)

POSITIVE FEEDBACK

- Close Reading process
- Autonomy in structuring the DSL
- Autonomy in choosing textual passages
- Ability to recognize particular textual phenomena
- Awareness of the main problems in translation
- Ability to memorize Greek words

Homerus, *Odyssea* 24

Homerus, *Odyssea* 24

35 τὸν δ' αὖτε ψυχὴ προσεφώνεεν Ἀτρεΐδαιο·
36 “ὄλβιε Πηλεΐος υἱέ, θεοῖς ἐπαΐκελ' Ἀχιλλεύ,
37 ὅς θάνες ἐν Τροίῃ ἐκάς Ἄργεος· ἀμφὶ δέ σ' ἄλλοι
38 κτείνοντο Τρώων καὶ Ἀχαιῶν υἱες ἀρίστοι,
39 μαρνάμενοι περὶ σείο· σὺ δ' ἐν στροφάλυγγι κονίης
40 κείσο μέγας μεγαλωστί, λελασμένος ἱπποσυνάνων.
41 ἡμεῖς δὲ πρόσπαι ἡμᾶρ ἐμαρνάμεθ'· σὺ δέ κε πάμπαν
42 παυσάμεθα πολέμου, εἰ μὴ Ζεὺς λαίλαπι παῖσεν.
43 αὐτὰρ ἐπεὶ σ' ἐπὶ νῆας ἐνεΐκαμεν ἐκ πολέμοιο,
44 κάτθεμεν ἐν λεχέεσσι, καθήραντες χροά καλὸν
45 ὕδατι τε λιαρῷ καὶ ἀλείφατι· πολλὰ δέ σ' ἀμφὶ
46 δάκρυα θερμὰ χέον Δαναοὶ κτείνοντό τε χαιῖτας.
47 μήτηρ δ' ἐξ ἄλδος ἦλθε σὺν ἀθανάτης ἀλήϊον
48 ἀγγελίης αἴουσα· βοή δ' ἐπὶ πόντον ὄρωρει
49 θεοσπίη, ὑπὸ δὲ τρώμος ἔλλαβε πάντας Ἀχαιοὺς·
50 καὶ νύ κ' ἀναΐξαντες ἔβαν κοίλας ἐπὶ νῆας,
51 εἰ μὴ ἀνήρ κατέρυκε παλαιὰ τε πολλὰ τε εἰδώς.
52 Νέστωρ, σὺ καὶ πρόσθεν ἀρίστη φαίνετο βουλή·
53 ὃ σφιν εὐφρονέων ἀγορήσατο καὶ μετέειπεν
54 “Ἰσχεσθ', Ἀργεῖοι, μὴ φεύγετε, κοῦροι Ἀχαιῶν·
55 μήτηρ ἐξ ἄλδος ἦδε σὺν ἀθανάτης ἀλήϊον
56 ἔρχεται, σὺ παιδὸς τεθνηότος ἀντιώωσα.”

Save Show HTML



2016/2017, ODYSSEY XXIV

ANNOTATION: Passages where Ajax's corpse is represented as an onstage object



Soph. Ajax, 990-1016	EuporiaRAGT	EuporiaAjax
<p>Χορός καὶ μὴν ἔτι ζῶν, Τεῦκρε, τοῦδ' ἐσσι μέλειν ἐφίεθ' ἀνὴρ κείνος, ὥσπερ οὖν μέλει.</p>	<p>☛ [991 ἐφίεθ' ἀνὴρ κείνος] #episkepsis ☛ ☛ ☐ ☛</p>	<p>☛ [990 καὶ ... 991 κείνος] #voluntas_mortui ☛ ☛ ☐ ☛</p>
<p>Τεῦκρος ὦ τῶν ἀπάντων δὴ θεαμάτων ἔμοι ἄλγιστον ὦν προσεῖδον ὀφθαλμοῖς ἐγώ, ὁδός θ' ὁδῶν πασῶν ἀνιάσασα δὴ μάλιστα τούμῳν σπλάγχχνον, ἦν δὴ νῦν ἔβην. ὦ φίλτατ' Αἴας, τὸν σὸν ὡς ἐπισηθόμην μόρον διώκων κάχινοσκοπούμενος. ὄξεια γὰρ σου βάζεις ὡς θεοῦ τινοσ διήλθ' Ἀχαιοὺς πάντας ὡς οἶχει θανῶν. ἀγῶ κλύων δύστηνος ἐκποδῶν μὲν ὦν ὑπεστέναζον, νῦν δ' ὄρων ἀπόλλυμαι. οἶμοι. ἴθ', ἐκκάλυψον, ὡς ἴδω τὸ πᾶν κακόν. ὦ δυσθέατον ὄμμα καὶ τόλμης πικρᾶς, σσας ἀνίας μοι κατασπείρας φθίνεις. ποῖ γὰρ μολεῖν μοι δυνατόν, εἰς ποίους βροτούς, τοῖς σσίς ἀρήξαντ' ἐν πόνοισι μηδαμοῦ; ἦ ποῦ με Τελαμών, σὸς πατὴρ ἐμός θ' ἄμα, δέξαιτ' ἂν εὐπρόσωπος ἴλεως τ' ἴσως χωροῦντ' ἄνευ σοῦ. πῶς γὰρ οὐχ; ὄτω πάρα μηδ' εὐτυχοῦντι μηδὲν ἠδιδον γελᾶν. οὔτος τί κρύψει; ποῖον οὐχ ἔρεϊ κακὸν τὸν ἐκ δορός γεγῶτα πολεμίου νόθον, τὸν δειλία προδόντα καὶ κακανδρία σέ, φίλτατ' Αἴας, ἡ δόλοισιν, ὡς τὰ σὰ κράτη θανόντος καὶ δόμους νέμοιμι σοῦς.</p>	<p>☛ [992 ὦ τῶν ἀπάντων ...1039 στεργέτω κάγῳ τάδε] #s #apud_corpus_stare ☛ ☛ [992 ὦ τῶν ἀπάντων ...993 ἄλγιστον] #s #aspectus ☛ ☛ [995 σπλάγχχνον] #viscera #motus_animi ☛ ☛ [1001 ὑπεστέναζον] #gemitus ☛ ☛ [1003 ἴθ', ἐκκάλυψον] #s #corpus_detegere ☛ ☛ [1003 ὡς ἴδω τὸ πᾶν κακόν] #s #aspectus #mortui_corpus ☛ ☛ [1004 ὦ δυσθέατον ὄμμα] #s #aspectus #mortui_corpus ☛ ☛ [1008 σὸς πατὴρ ἐμός θ' ἄμα] #propinquitatis_vinculum ☛</p>	<p>☛ [992 Τεῦκρος] #s #apud_corpus ☛ ☛ [992 ὦ~δὴ] #gemitus ☛ ☛ [993 ὀφθαλμοῖς] #aspectus ☛ ☛ [992 ὦ...995 ἔβην] #amentatio #singularis ☛ ☛ [996 ὦ φίλτατ' ...1001 ἀπόλλυμαι] #dolor ☛ ☛ [998 ὡς θεοῦ τινοσ] @cfr: 998_1 #824_830 ☛ ☛ [1001 ὑπεστέναζον] #dolor #submissus ☛ ☛ [1002 οἶμοι] #gemitus ☛ ☛ [1003 ἴθ', ἐκκάλυψον ... ὡς ἴδω τὸ πᾶν κακόν] #corpus_patiens ☛ ☛ [1003 ἴθ'] (@schol_L) #coryphaeus ☛ ☛ [1003 ἴθ'] (@schol_L) #Tecmessa_absens ☛ ☛ [1003 ἐκκάλυψον] #s #corpus_manifestus #vavato ☛ ☛ [1008 με] @vi:1008_1 Küster ☛ ☛ [1008 ἦ... 1010 σοῦ] @cfr:1008_1 Radt, TGF, 4.576 ☛</p>

- scenic and ritual features of the hero's body
- syntactic relations between Ajax's body as an *agent*, or a *patient* of the actions performed by other characters.

POSITIVE FEEDBACK

- Mixed- approach annotation, (Syntactic, semantic, thematic)
- Matching with RAGT's DSL

EUPORIA IN SECONDARY SCHOOLS



LICEO CLASSICO

5 years: Greek + Latin, Humanities, Scientific subjects

TRADITION

- *Ginnasio* (2 years)+ *Liceo* (3 years)
- Mnemonic knowledge and suspicion towards new methods and tools

INNOVATION

The information-technology projects don't match with the Liceo Classico's area of study

Shortfall of student intake:

2006/2007:

- Liceo Classico 5,8% enrollement
- Liceo Scientifico 25% enrollment

(F. Condello, *La scuola giusta*, Milano 2018)

THE IMPACT OF EUPORIA IN LICEO CLASSICO

1. Annotating Greek texts is a completely **new experience**
2. Euporia matches with the student's field of study and provides **digital skills**
3. Euporia enhances **interest** and **autonomy** in choosing annotation topics and structuring the DSL, workflow, etc..
4. Improves **communication** between teachers and students, and provides peer learning experiences



ANNOTATION:

- Morpho-syntactic
- Thematic (semantic field of Justice and Family in V cent. b.C.)
- Contrastive Translation

EXTRA TOOLS

- Perseus Word Study Tool
- Alpheios project

Lysias, *De caede Eratosthenis*

Testo Greco, Nuova Traduzione

1 **π**ερὶ πολλοῦ ἂν ποιησαίμην, ὃ ἄνδρες, τὸ τοιούτους ὑμᾶς ἐμοὶ δικαστὰς περὶ τούτου τοῦ πράγματος γενέσθαι, οἷοίπερ ἂν ὑμῖν αὐτοῖς εἴητε τοιαῦτα πεπονθότες· εὐ γὰρ οἶδ' ὅτι, εἰ τὴν αὐτὴν γνώμην περὶ τῶν ἄλλων ἔχοιτε, ἦνπερ περὶ ὑμῶν αὐτῶν, οὐκ ἂν εἴη· ὅστις οὐκ ἐπὶ τοῖς γεγενημένοις ἀγανακτοίη, ἀλλὰ πάντες ἂν περὶ τῶν τὰ τοιαῦτα ἐπιτηδευόντων τὰς ζημίας μικρὰς ἠγοῖσθε.

*

Salvato

Commento

- [περὶ] #MOR prep #SYN +gen #OBS +acc ha valore di argomento
- [γενέσθαι] #LEM γίγνομαι = divento #MOR v aor inf mid #TRA trovarsi in
- [πράγματος] #LEM πράγμα #LEX:JUS #DIF:3
- [περὶ ... π ράγματος] #SYN complemento argomento
- [πεπονθότες] #LEM πάσχω= patire #MOR v part pl perf act masc nom
- [εἰ ~ ἂν] #SYN periodo ipotetico 3 #OBS sfumatura potenziale
- [ζημίας] #LEM ζημία= punizione, pena, multa in denaro
- [ἠγοῖσθε] #LEM ἠγέομαι = guidare, condurre #SYN +acc +acc #TRA potreste ritenere
- [ἄνδρες (δικασταὶ)] #LEM ἀνρῆ, ἀνδρός + δικαστής, οὔ = giudici #LEX:JUS
- [δικαστὰς] #LEM δικαστής, οὔ = giudici #LEX:JUS

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THANK YOU!

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