Arguments Based on Conditional Promise

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Reasoning and Analytic Methods
Faculty of Arts, Comenius University in Bratislava,
1. Proemium

2. Crocodile argument has a structure of a contract

3. What is a contract

4. Historical aspects of Crocodile argument

5. Approaches to solution of Crocodile argument
HB Curry claims that modern logic has **a mission** to solve “now called paradoxes, or antinomies” and it has **ability** to solve them (Foundations of Mathematical Logic, Introduction, p. 3ff)

What are the (Curry’s) paradoxes? - aporia, sophism, insolubilia, verbis captionum (captiuncula), verba contorta et fidicularia, dilemma, paralogism, antistrephonta (reciproca), ..........

- **What has to be solved** there?
- How we know that a **solution** is **adequate and appropriate**?
- Do we have **paradoxes or arguments**?
• Revision of modern approaches

• Understanding of *Crocodile argument*
  • Kneales: *Paradoxes had certain aim* and they are not produced in an entirely pointless way!
  • Respecting sources and Ancient background

• Adequate tools for reconstruction
  • “Ancient ambient” determines the genuine character of puzzles
  • *Modern reconstructions* (the most frequently) neglects historical sources
BURIDAN’S BRIDGE

Buridan repackages “Your reply will be negative” as a stepping stone to a more famous sophism: Suppose Plato is a bridge keeper. Plato is enraged and tells Socrates, “If what you say is not true, tell me what is true.” Socrates says, “I will tell you what is not true. I will not tell you what is true.”

Although Buridan is sometimes credited with being the inventor of the bridge paradox (Jacquette 1991), the puzzle probably goes back to Chrysippus.

Chrysippus does not answer but the grammarian Aphthonius is on the record recommending that the crocodile be told “You do not intend to restore it.”

*Customer:* Your question is a poser. For I’m at a loss what to say first, so as insure the recovery of the child. But, for Heaven’s sake, do you make answer made up his mind to do about giving up the brat—what would you say was his intention in the matter?

*Customer:* Your question is a poser. For I’m at a loss what to say first, so as insure the recovery of the child. But, for Heaven’s sake, do you make answer

and rescue me the little fellow, lest the monster be too quick for me, and eat him up.

(Lucian 1901, 413)

Chrysippus does not answer but the grammarian Aphthonius be told s (1971) gue. To ed with n Eleia Alex- imenes' ed with exander ent the mercy. ted and he s ed. this e of and rds; and bound by the compulsion of his oath, unwillingly pardoned the people of Lampsacus.

(1971 6.18.2–4)

Since Anaximenes lived two centuries before Alexander, this anecdote is chronologically impossible. Even so, the tale
• Cap. LIV and LV devoted to sophisms (Quint. Inst. orat. i, 10).

• Lucian is a source for cap. LIV (devoted to sophisms of Eubulides).

• Source for cap. LV (devoted to Horn paradox and Crocodilene) could be from Progymnasmata MS (of Maximus Planudes, 13.-14. Cent.).
Lexicones, dictionaries, redaction of classical writers

XVI Century (editio :

- *Stephanus Dictionarium seu Latinae linguae Thesaurus ...* 1531, 1536, 1537 : Crocodilinae is mentioned, (only Pliny)

- *Stephanus, Dictionarium seu Latinae linguae Thesaurus*, 1543 (The corrected and augmented Basle edition by Antonius Birrius)

- *Ioannis Brodæi ... Miscellaneorum libri sec.*, 1555

- *Lexicon graecolatinum... Venezia, A...

- *Nizolinus - Dictionarium seu thesaurus latinae linguae ... nuper Venetiis impressus, omnibus mendis expurgatus, etc.*


- *Thesaurus linguae Latinae : sive forum Romanum, omnium Latini sermonis authorum tum verba tum loquendi politiciorque una cum praefatione ... Basileae : [ex officina
Kinds of promises?

1. I am promising you to give a 5 cents.

2. I am promising you to give 5 cents if you close the window.

3. I am promising to anyone who close the door to give 5 cents.

4. I am promising you to repair your car and you are promising me to paint the wall.
Kinds of promises?

1. I am promising you to give a 5 cents. **Fiduciary (gratuitous) promise (pro bono)**; Kind of unilateral contract

2. I am promising you to give 5 cents if you close the window. **Unilateral conditional contract**

3. I am promising to anyone who close the door to give 5 cents. **Unilateral conditional contract** (2. and 3.: a scope of promise!)

4. I am promising you to repair your car and you are promising me to paint the wall. **Bilateral contract (offer/promise exchange)**
What is a promise?

• Deontic approach - promises (directly) implies obligations:
  
  \[ e \text{ither } p \rightarrow O p? \text{ or } O(p \rightarrow Op)? \]

• What is (a propositional content of) \( p \)?

• Is it \( p \) an attitude?

• Is it \( p \) a speech act?

• Duty is not (always) rising instantly with a promise!
  
  • Duration
  
  • Succession of intermediate acts

• Some pioneering approaches...

von Wright, On Promises, 1962: “Promises belong to the same category as agreements and contracts.” (Atiyah, Tierosma, Shane, Zimmerman...)
What is a promise?

- Promise is a speech act:
- Austin (1962), promise is performative illocution
- Searle (1969) ‘illocutionary act’: you are uttering a sentence predicating future act with
  - a) intention
  - b) of doing promised act,
  - c) putting yourself under obligation to do that act and
  - d) the promesee recognizing that obligation in virtue of her knowledge of the meaning of a sentence.

Unilateral conditional contract

Subjective reasons and capacities:
Wishes, Believes, Intentions, Abilities of performance, Expectation Interest ...

Offeror (Promisor)

Offeree (Promisee)

Subjective reasons and capacities:
Wishes, Believes, Intentions, Abilities of performance, Expectation Interest ...

Promissory proposal (offer) → Agreement or commitment of both parties in Terms

Acceptance

Terms are subjects of parties’ agreement
• primarily terms - Conditions (+ including reasonable duration of an offer)
• secondary terms (conditions) - Warranties
Terms don’t (necessarily) covers personal motivation (interests)

Commitment about terms is related to Trust (in contractual relation)
• Good faith and sincere intention (“a firm decision”) → Liability
• Reliance
Unilateral conditional contract

Announcing an offer
Promissory proposal

Waiting for acceptance

Awareness of acceptance

Waiting for performance

Acceptance of the offer

Interest

Acceptance announcing

Performance of an act, (a condition for promise fulfilment)

Announcing of condition fulfilment

Acceptance / awareness of performance

Consideration (duty / obligation for an offeror)

Acceptance (end of contract)

Offer performance (or remedy)
Unilateral conditional contract

Contractual steps presented by Petri nets

Offeror

Offer accepting

Offer receiving

Offer announcing

Promissory offer

Awaiting acceptance

Recognizing acceptance

Awaiting performance

Recognizing performance (enforcement)

Offer performance

Offer revoke

Condition performance

Offer accepting

Announcing Acceptance Counter-offer (negotiation)

Announcing Counter-offer acceptance (negotiation)

Awaiting fulfilment

Remedies

Contract end (end of obligation)
A - offeror: Promissory proposal (offer)

B - offeree: Performance of an act (condition for a promise fulfilment) declares acceptance (of offer)

A+B: Consideration (duty for A)

A: Offer performance
A - offeror: Promissory proposal (offer)

B - offeree: Performance of an act (condition for a promise fulfilment) declares acceptance (of offer)

When the duties rise?
- Duty for **an offeror** rises with an offeree’s performance of a condition (or with an undoubtful beginning of its performance?)
- **Offeree** has no any duty in unilateral conditional contract
Unilateral conditional contract

A - offeror: Promissory proposal (offer)

B - offeree: Performance of an act (condition for a promise fulfilment) declares acceptance (of offer)

“A+B: Consideration (duty for A)”

A: Offer performance

“Sincere promise”, Searle (1969) - when the speaker \textit{intends} to do the act promised:
- “S \textit{intends} that the utterance of T will place him under an obligation to do A. “
- Promisor must \textit{believe} it to be true... as that proposition representing an actual state of affairs
Reconstruction of *Crocodilinae* argument

- **Modern solutions of *Crocodilinae***:
  - *non of them respects historical sources*
- **Mally, 1922**,
  - defects rises in substitution of “You will…” with “You have to…”
- **Ajdukiewicz, 1931**
  - Propositional approach
- **Reach, 1937-8**
  - „problem of quotation“, intension and extension, analogy with “Layer”…,
- **Grzegorczyk, 1961**
  - „deontický“ postup
- **Falletta, 1990**
  - Something like “Contract” (following L. Carroll)
- **Lukowski, 2001**
  - Some refinements of Ajdukiewicz and Grzegorczyk (a few lines are missing in the proof)
  - Analogy with Buridan’s Bridge Paradox, Hanging Man, etc.: Jacquette, Clarke
  - Analogy with Protagoras / Euathlus: Goosens, Aquist, Ulatowski
Reconstruction of *Crocodilinae* argument

Ancient sources with some comments that elaborate *Crocodilinae*:

2. *Lucianus*, *Hermotimus*, 81.22-24;

- 2. not in FDS (!!!); also,
- 2. not correctly cited in Pauly-Wissowa *Real Enz.*, etc.
## Familiarity of arguments

<table>
<thead>
<tr>
<th>Source</th>
<th>Arguments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lucianus, <em>Vitarum auctio</em> § 22 sq.</td>
<td>Crocodile; 'Master Argument.'; 'Electra, Reaper'</td>
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<tr>
<td>Lucianus, <em>Vitarum auctio</em> § 24</td>
<td>Reaper</td>
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<tr>
<td>Lucian, <em>Hermotimus</em>, 81.22-24</td>
<td>Crocodile, Horned</td>
</tr>
<tr>
<td>Lucian, <em>Dialogi mortuorum</em>, 1,2,13</td>
<td>Crocodile, Horned</td>
</tr>
<tr>
<td>Quintilianus, <em>Instit. orat.</em> I 10,5</td>
<td>Crocodile, Horned</td>
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<td><em>Korax &amp; Tisias</em>, Syrianus, <em>Comm. in Hermog. libr. De statibus</em></td>
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<tr>
<td>Scholia in Hermog. De statibus, Rhet. Gr.</td>
<td>Accusation and defence</td>
</tr>
<tr>
<td>Syrianus, <em>Comm. in Hermog. libr. De statibus</em></td>
<td>Crocodilinae; Reaper; Protagoras &amp; Euathlus; Crocodile, Horned</td>
</tr>
</tbody>
</table>

- **Horned**
  - Luc., *Hermotimus*;
  - Luc., *Dialogi mortuorum*;
  - 2 x Scholia in Luciani Vit. Auct. § 22; § 77
  - Quint., *Instit. orat.* I 10,5
  - Clemens Alex., *Stromat V* 1 § 11,

- **Reaper**
  - 2 x Lucianus, *Vitarum auctio* § 22, § 24
  - 2 x Scholia in Luciani Vit. Auct. § 22; § 77

- **Protagoras & Euathlus**
  - (Korax & Tisias) kategoria kai apologia (accusation and defence)
  - 2 x Scholia in Hermog. De statibus,

- **Crocodilinae**
Reflecting familiarities and analogies in reconstruction:

- **Reaper, Horned (and Lazy Argument)** are **dilemmatic argument (CCD)**
- **Reaper (and Lazy argument)** is one of so-called **fatalistic arguments**: Stoics - strong principle of bivalence (including future truths)
- **Protagoras and Euathlus** (Korax and Thisias) is an argument related to the question of "true promise" and contractual obligations.

Some dilemmatic forms:

<table>
<thead>
<tr>
<th>Simple constructive dilemma</th>
<th>Complex constructive dilemma</th>
</tr>
</thead>
<tbody>
<tr>
<td>A) ( p \rightarrow p ) (~p \rightarrow p ) ( p \lor \sim p ) ( \sim p \rightarrow p ) ( p \lor \sim p )</td>
<td>C) ( p \rightarrow r ) (~p \rightarrow s ) ( p \lor \sim p ) ( p \lor \sim p )</td>
</tr>
<tr>
<td>B) ( p \rightarrow q ) (~p \rightarrow q ) ( p \lor \sim p ) ( p \lor \sim p )</td>
<td>D) ( p \rightarrow r ) ( q \rightarrow s ) ( p \lor \sim p ) ( p \lor \sim p )</td>
</tr>
</tbody>
</table>
Stoics on promises and contracts:

**Chrysippus’ the speech act theory**

- Swears are *not* propositions, but contain propositions: Promise is *prefix of proposition* which truth is tied to some point (duration) in time (Ammonius in Int. 2,9-3,6; Nocostatus apud. Simpl. In Arist. Categ. p. 406,34-407,5)
- Future truths are necessary true or untrue (firm principle of bivalence)

**Promise in respect to time of utterance:**

- **If duration is small or negligible** or if we have past utterance
  - true promise (ἀληθορκεῖν) or
  - false promise (ψευδορκεῖν).
- **If duration is considerable** - when promise relates to time other than that of utterance - truth of proposition relates to time of fulfilment (deadline) of “the contract” (ἀλλ' ὅτε οἱ χρόνοι ἐνίστανται τῶν κατὰ τὰς ὀμολογίας). In such case,
  - one is either ***swearing well*** (εὐορκεῖν) or
  - ***swearing amiss*** (perjury, ἐπιορκεῖν).

The keeping or failure of a contract (εὐσυνθετεῖν / ὀσυνθετεῖν) occurs not at the time agreement is made but at the **time of fulfilment specified within it** (καθ’ οὗς ὑμολόγησεν ἐπιτελέσειν), i.e. when the agreement is fulfilled.
Stoics on promises and contracts:

**Chrysippus**
Swears are true or false in respect to intention to perform the oath - Stobaeus Florileg. 28, 18 H. (28, 15 M.)

**Cleanthes**

Seneca - basis of swearing truly (de beneficiis, vi, 11f):
- wish (intention) + action (in a good faith) + and ability (fortune)
- only ability is not enough for true swears!

Seneca illustrates it with Cleanthes example with lads...

---

One of them searched through the whole colonnade, and also hunted through other places in which he thought that he might be found, but returned home alike weary and unsuccessful. The first lad, he says, will have our praise, for, to the best of his ability, he did what he had been ordered; the other sat down to watch a mountebank near by, and, while amusing himself in company with other slaves, the careless vagabond found Plato without looking for him, as he happened to pass by. The fortunate idler we shall flog.”
Reconstruction of *Crocodilinae* argument

**Dramatis personae:**
- Rubbers, father ("Seer") and daughter
- Crocodile, Mather, child (Egyptian legend)

**Three different sources:**

   - "to tell the truth (εἴπερ τἀληθὲς ἐρεῖ)"
   - "to "guess (say) truly (ἐπερὶ τἀληθὲς ἐρεῖς)"
   - "it is not known what (Luc. Herm. : ὁ πατὴρ υἱοίδ᾽ ὅτι δέδοκα"

2. Luc. vit. auc. 22: "What he intended to do" ("ἢ νεὶπῃς τἀληθὲς ὅτι δέδοκα"")
   - "What he is going to do – what would you say he had made up his mind firmly to do ("τί φημες ὅτι ἐγνωκέει")"

   - "if seer gives a true prophecy (divination, "εἰ τἀληθῆ μαντεύσαιτο")
   - whether he will return his daughter back (insincere offer, sincere intention is missing, semi-fatalistic scenario) – (comparable to: What I did...)

**A:** To tell the future truth (what will really happen)

**B:** To tell what it is intending to do (what it will do)

**C:** To guess a (past) decision

Three versions according to the sources
A future truth - what will really happen

- Solution is familiar to Lazy Argument and Reaper Argument
- Semi-fatalistic solution (a fixed future truth - fate; a part-time fatalism!)
- Illusory promise (insincere, impossible promise; Burley (Obligations) “positio impossibilis”
- Whatever say, offeree has no advances

What it is intending to do (what it will do)

- Two step solution (resembling to “Protagras / Euathlus”)
- Firm actual decision, however, previous decision is performable in accordance with a contract or only after contract ends
- Priority of promise (bona fide) - it must make promise possible
- Quasi-Aphthonian solution: gives mother “chance to escape” with child (in the meanwhile)
- It is the sole mother’s advance of telling “You will not return” (in respect to rival A and C solutions)

Past decision

- Promise is given in a good faith
- In respect to previous intention / decision
- Whatever she said, offeree has no any advances
Solution A – Future Truth

C: Not return

Offer to Mother

Mother answer

M: Not return

M: Return

C: Return

Not return

Promisor’s

A) inability to perform promised act - insincere promise / impossible promise or

B) absence of the good faith

C) W. Burley (De Obl.) impossibile positio (no duty), void contract

Solution C – Past decision

C: Not return

Offer to Mother

Mother answer

M: Not return

M: Return

C: Return

Not return

Gambler’s solution

Promisor:

- Ability of performance
- Good faith

Promisee:

- Chance and fortune
Solution B - To guess “what it will do”

- Impossibility to perform duty and decision at once (it seems like a conflict) - order...
- Two step solution (duty, ability) - analogy with Protagoras & Euathlus, quasi-Aphthonius solution
- Accepting the contractual relation (offer - after announcing a firm intention) leads to a (temporary) suspension of C’s decision performance
- By ending of contractual relation - decision is still actual
- There is no conflict between C’s decision and duty, he is doing “the best he can”

<table>
<thead>
<tr>
<th>Val.</th>
<th>B - decision</th>
<th>C - answer</th>
<th>O - obliged to</th>
<th>F - devotion to decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>release</td>
<td>release</td>
<td>release</td>
<td>release</td>
</tr>
<tr>
<td>2</td>
<td>release</td>
<td>not release</td>
<td>not release</td>
<td>release</td>
</tr>
<tr>
<td>3</td>
<td>not release</td>
<td>release</td>
<td>not release</td>
<td>not release</td>
</tr>
<tr>
<td>4</td>
<td>not release</td>
<td>not release</td>
<td>release</td>
<td>not release</td>
</tr>
</tbody>
</table>

“(moral) conflict” in two valuations
Solution B - To guess “what it will do”

- In the case of contract Petri Nets can be interpreted in a different way.
- **Segments** of different logics can be used in interpretation of dynamical structure:
  - Temporal (since/until; before/after, ...)
  - Deontic...
  - + propositional, first order, relevant, ...
  - My preference: **linear logics** - it suits well the whole event given by Petri nets.

A promise fulfillment - end of the contract.
Solution B - To guess “what it will do”

<table>
<thead>
<tr>
<th>Scenario 1: C~R; MR</th>
<th>Scenario 2: C<del>R; M</del>R</th>
</tr>
</thead>
<tbody>
<tr>
<td>t2</td>
<td>t2</td>
</tr>
<tr>
<td>P2 –o (P3 ⊙ P6)</td>
<td>P2 –o (P3a ⊙ P6)</td>
</tr>
<tr>
<td>t6</td>
<td>t4</td>
</tr>
<tr>
<td>P6 –o P4b</td>
<td>(P3a ⊙ P3b) –o (P5a ⊙ P5b)</td>
</tr>
<tr>
<td>t3</td>
<td>t5</td>
</tr>
<tr>
<td>P3 –o P4a</td>
<td>(P5a ⊙ P5b) –o (P4a ⊙ P4b)</td>
</tr>
<tr>
<td>t7</td>
<td>t7</td>
</tr>
<tr>
<td>P6 –o P3b</td>
<td>P6 –o P3b</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Scenario 3: CR; MR</th>
<th>Scenario 4: CR; M~R</th>
</tr>
</thead>
<tbody>
<tr>
<td>t8</td>
<td>t8</td>
</tr>
<tr>
<td>P2 –o (P9a ⊙ P6)</td>
<td>P2 –o (P9a ⊙ P6)</td>
</tr>
<tr>
<td>t10</td>
<td>t9</td>
</tr>
<tr>
<td>(P9a ⊙ P8b) –o (P10a ⊙ P10b)</td>
<td>P9a –o P11a</td>
</tr>
<tr>
<td>t11</td>
<td>t6</td>
</tr>
<tr>
<td>(P10a ⊙ P10b) –o (P11a ⊙ P11b)</td>
<td>P6 –o P11b</td>
</tr>
<tr>
<td>t7</td>
<td></td>
</tr>
<tr>
<td>P6 –o P8b</td>
<td></td>
</tr>
</tbody>
</table>

C: Decision to not return

M: Not return

Offer to Mother

Mother answer

M: Return

Temporary delay of a decision performance

C: Decision to return

Return

Not return

A promise fulfillment - end of the contract
Solution A, B, C on a single graph
Concluding remarks:

1. Act of promising is interpreted as a form of a speech act
2. All solutions presented corresponds to unilateral conditional contract / promise
3. All solutions are based on available historical sources
4. There is no paradoxical outcomes and the source of conflicted situations are explained
Concluding remarks:
Appropriate solutions asks for fidelity to the sources!

Some suggested steps in the argument reconstructions

1. Identification of an argument and its sources
2. Classification of given argument
3. Elucidation of background logical theory (ancient as well as modern) behind the argument or corresponding with it.
4. Searching for an interpretation of:
   • the semantics of argument’s logical expressions
   • the semantics of argument’s extra-logical expressions
   • argument’s theme and topic identification
5. Synthesis formulation resulting from point 1. to point 4.
6. Searching for philosophical interpretations of the argument
7. Selecting the proper interpretation and its testing
Thank You!