

The Structure of Ad Hominem Dialogues

Katarzyna BUDZYNSKA^{a,b} and Chris REED^b

^a *Institute of Philosophy and Sociology, Polish Academy of Sciences*

^b *School of Computing, University of Dundee, Dundee, UK*

Abstract. The paper proposes a new perspective on modelling ad hominem (AH) techniques in a dialogue. The approach is built upon the following assumptions: (i) that ad hominem is not an inferential, but undercutting structure; (ii) that it can be a non-fallacious dialectical technique in some communicative contexts; and (iii) that critical questions in Walton's AH scheme can be used to determine strategies of defending against AH attack. We aim to achieve two goals in this paper: first, to represent the deep ontological structure of dialogues with the speaker's character attacks and defense; and second, to design a game AdHD in which a personal attack, and defense against it, are legitimate dialogue moves.

Keywords. generic ad hominem; attacking and defending ethos; ontology of argument; dialogue structure; dialogue protocol; games with personal attack

1. Introduction

Ad hominem (AH) arguments are not only common and powerful techniques used in real-life dialogues, but in some communication contexts they can be also relevant and non-fallacious methods of achieving knowledge (cf. [14]). Yet there is no satisfactory formal representation of dialogues in which AH is a legal move, largely because the representation of persons (i.e. of a hominem that might be attacked) is impoverished: "In this framework [in formal dialogue systems], the notion of 'person' is thin and minimal. A 'person' is conceived of as a 'participant' in a regulated game, or formal structure of dialogue, defined only by his or her role as a maker of moves in the game. In any of the Hamblin or Lorenzen dialogue games, there is no place for using an argument of the type GENERIC AH" [14, p.116]. This paper aims to make a first key step to fill that gap.

Starting with the most basic AH technique (Section 2), we aim to achieve two goals. First, it is shown how to represent a deep ontological structure of dialogues with ethotic attacks and defenses (Section 3). AH is modelled as an undercutter attacking an ethotic assumption on the performance of an assertive speech act. Then, using the critical questions of the generic AH scheme [14], four strategies for defending against ethotic attack are formulated and represented in a dialogue structure. The second goal of the paper is to design a game AdHD in which personal attacks and defenses are legitimate moves in a dialogue (Section 4). Like in a legal dialogue, where a claim can be accepted either on the basis of some evidence (reasoning) or witness testimony, a proposition can be accepted by players either on the basis of further support (argument) or the character of the speaker. As a result, in AdHD a claim move typically places its propositional content in commitment stores of both players. Yet the hearer may "block" incurring commitment, either if he has doubts about its truth (by making a move *Why?*) or if he has doubts about the speaker's ethos (by making an AH attack). The character attack move can be followed by a character defense move which if successful will restore the situation from before an attack, i.e. it will place the initial claim's content into the hearer's commitment store.

2. Ad hominem argument scheme

If ad hominem is a fallacy, then why should we want to model it in a dialogue game? There are two answers. The first is that ad hominem arguments are not inherently bad, or inherently fallacious. As Walton points out [14, pp.44–103], AH has recently started to be recognized (see e.g. [2,1]) as a reasonable technique in some communicative contexts. For example, the politician's behaviour or character may be treated as relevant to his political claims and actions or the cross-examination of an expert witness can be a reasonable legal argument. The second reason concerns the way in which the fallacy can be dealt with in dialogue. In extant dialogue systems, it is easy to commit a fallacy such as AH because it is acting at a level of semantics below what is tracked in the dialogue protocol. One might, for example, express the prototypical AH simply by having a claim p (that a speaker's opinion should be rejected) and a claim q (that a speaker's character is bad), with a possibly implicit major premise that $q \rightarrow p$ – in a sense, 'deductivizing' the pattern. But this leaves the dialogue with nowhere to go. Either it proceeds without recognising the pattern as fallacious, or it stumbles, with no dialogical moves available to claim foul and reject the fallacious step (for, as Walton's analysis demonstrates, testing the applicability of AH is more than establishing the truth of the major premise).

In this paper we use the basic type of ethotic attack, i.e. a generic ad hominem argument, analysed in this way in [14,15]:

ARGUMENTATION SCHEME FOR GENERIC AH

i is a bad person.

Therefore, i 's argument α should not be accepted.

(CQ1) Is the premise true (or well supported) that i is a bad person?

(CQ2) Is the allegation that i is a bad person relevant to judging i 's argument α ?

(CQ3) Is the conclusion of the argument α should be (absolutely) rejected even if other evidence to support α has been presented, or is the conclusion merely (the relative claim) that α should be assigned a reduced weight of credibility, relative to the total body of evidence available?

According to the AH argument scheme, from the speaker's bad character (negative ethos) we may infer that what he says should not be accepted. For the clarity of the paper, we illustrate our study on a simplified dialogue with AH technique:

- (1) a. Bob said, A
- b. Wilma said, You are a bad person.
- c. Bob said, No, I'm not.

In this model, Wilma's statement would be interpreted as AH argument:

(Concl) Bob's argument A should not be accepted.

(P₁) Bob is a bad person.

(CQ1) Is Bob really a bad person?

The conclusion supported by (1-b) expresses that the content of Bob's statement (1-a) should not be accepted. Additionally, Bob's response to attack, i.e. the utterance (1-c), corresponds to the first critical question in AH scheme.

3. Ontological components of AH dialogues

The standard accounts assume that AH arguments have inferential structure, i.e. that they are “pro-” arguments. In [3], it was shown that such an AH-model is structurally inadequate, because although generic AH is represented as inference, it implicitly assumes that AH is used to *attack* a speaker’s ethos. In other words, the counter-argumentative character of AH is represented not in its structure, but its content. The new model [3] also shows that the effect of an AH attack “the speaker *i*’s argument α should not be accepted” expressed in its inferential model can be interpreted as an *undercutting*. That is, attacking the speaker’s ethos will not result in “proving” that what he says is false (i.e. “proving” that $\neg\alpha$), but rather, that the speaker’s credibility does not provide good grounds for thinking the conclusion to be true, and that without anything further it should be rejected. Though AH is thus an undercutter, its character is still generalisable and characterisable uniquely without reference to the types of arguments it is being used against.

As a result, the ontological structure of AH dialogues rests upon the assumption that AH should not be represented as a support (in AIF⁺ terms [11], as a RA-node), but as an attack (in AIF⁺ terms, as a CA-node). Moreover, the attack should be modelled as undercut (resulting in rejecting the acceptance of α) rather than as rebuttal (resulting in accepting the negation of α). Apart from anything else, representing it as an undercut avoids the additional complexity introduced if we were to represent Walton’s AH conclusion directly: “*i*’s argument should be rejected” is, after all, a higher order statement and although some initial investigations of higher order statements have been laid out in [8], such substantial increased complexity is not warranted if we are simply trying to model ethotic attacks. Following AIF⁺, our approach here is to focus on the representation of the structure of AH, not on evaluation, and particularly not on its evaluation to determine possible fallaciousness, as is the focus of, e.g., [6] and largely of [14].

3.1. Character attack

In order to model the non-inferential undercutting structure of AH, we need a formalism which explicitly represents ethos in the object language; the only such formalism is Inference anchoring Theory [5,4]. According to IAT, the assertion (1-a) and AH attack (1-b) would be represented as in Fig. 1. Bob’s utterance and its propositional content A are linked together via an assertive illocutionary connection (see the node *asserting instance #1*). Illocutionary connections links together speech acts performed in a dialogues with their propositional contents and are related to the illocutionary force of a given speech act. The illocutionary force of an utterance can be of a number of types (assertive, directive, etc.) and can involve various assumptions and exceptions of its own [16]. Here we use [12] as the theory of illocutionary structure, despite recognising its simplicity and limitations, some of which are addressed in more sophisticated accounts such as [6].

The type of illocutionary connection is dependent on the constitutive rules (including sincerity rules). For example, in order for the connection to be reconstructed as assertive, the utterance has to be felicitous assertion, i.e. it has to satisfy constitutive rules of assertive acts, including the rule of sincerity. As a result, to identify an illocutionary connection as an instance of asserting, the *ethotic condition* of the speaker’s credibility

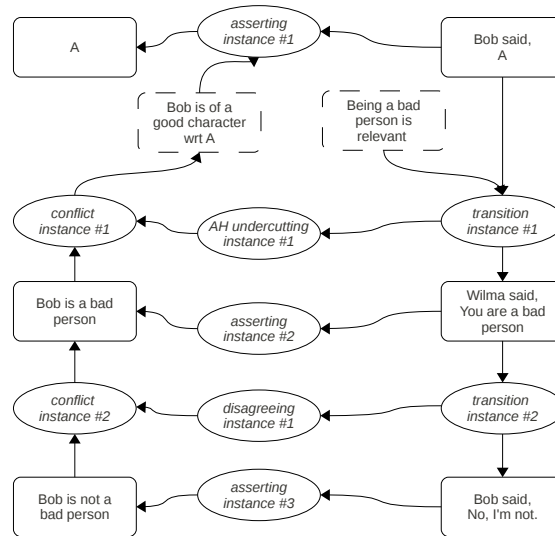


Figure 1. The dialogue structure for a direct character defense.

has to be fulfilled (thus, the ethotic condition in assertive illocutionary structures such as e.g. “Bob is of a good character” for *asserting instance #1*).¹

The utterance (1-b) is also an assertion with content, “Bob is a bad person”. Yet this proposition is in conflict (see the node *conflict instance #1*) with “Bob is of a good character with respect to A) which constitutes the condition on the illocutionary connection *asserting instance #1*. The conflict node is linked to *transition instance #1* via an undercutting illocutionary connection of ad hominem type (see the node *AH undercutting instance #1*). This represents that an undercutting speech act is not the result of an act of one speaker, but a result of the dialectical interaction between speakers (the attacking one and the attacked one).

In the proposed account, Wilma’s AH move in (1-b) is interpreted not as inferential but as an *undercutting structure* which directly attacks Bob’s character (an ethotic condition on illocutionary connection generated by the utterance (1-a)). It also indirectly attacks the content of this utterance, i.e. a successful AH attack on the speaker’s character would undercut acceptability of the propositional content of his speech act, i.e. acceptability of A.

3.2. Character defense

According to [14]’s model, generic AH attack can be tested if it was appropriately applied in a given communicative context using three critical questions. In this paper, the strategies described in those questions will be used to propose a model which will allow the representation of possible responses that an attacked person can give in order to try to defend his character.

¹For the clarity of presentation, only ethotic components necessary to describe AH dialogues will be considered and diagrammed. Furthermore, although the fulfilment of ethotic conditions can lead to the establishment of trust between interlocutors, that is not our focus here.

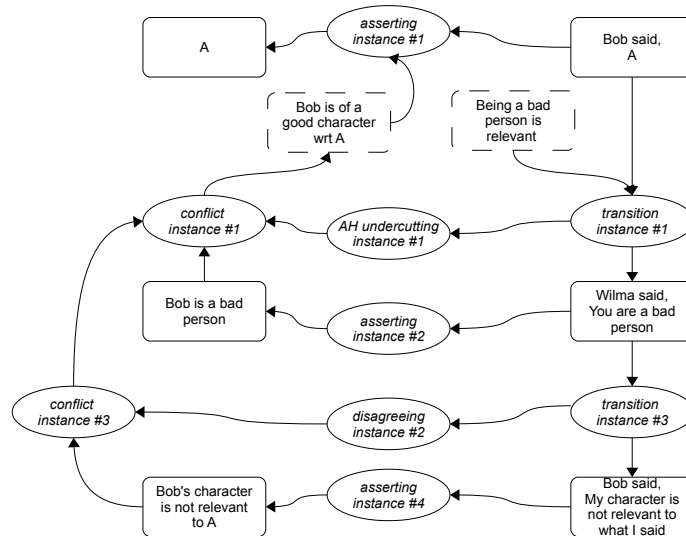


Figure 2. The strategy of stating irrelevance of a character to what is discussed (to a claim merit).

3.2.1. Direct character defense

The first critical question tests if the speaker has indeed negative ethos. This corresponds to the reply given by Bob in (1-c). The content of Bob's defense (1-c) is the proposition "Bob is not a bad person" which is in conflict (see the node *conflict instance #2* in Fig. 1) with the propositional content of Wilma's utterance (1-b) constituting an AH attack. The dialogue rule allowing the transition between Wilma's attack and Bob's defense *transition instance #2* creates the disagreeing illocutionary connection with the conflict structure. As a result, this model demonstrates that Bob's defense (1-c) directly responds to Wilma's AH undercutter "Bob is a bad person".

3.2.2. Character and claim relevance

The second critical question expresses that the attacked person can adopt an indirect strategy of defense by pointing out that his character is not relevant to judging (evaluating) his claim. Assume that instead of the defense (1-c), Bob provides such a response:

- (2) Bob said, My character is not relevant to what I said.

In this scenario, Bob's response (2) has the content "Bob's character is irrelevant to A" which is in a conflict (see the node *conflict instance #3* in Fig. 2) not with the content of Wilma's AH attack "Bob is a bad person", but with a conflict between "Bob is a bad person" and "Bob is of good character wrt A" (i.e. with the node *conflict instance #1*). In other words, this strategy is built upon the assumption that the AH attack undercutting A via *conflict instance #1* defaults somehow: that it is not a good conflict.

This response defends the speaker's character indirectly, since it does not refer at all to Wilma's allegation that Bob is a bad person. Instead, it attacks the appropriateness of Wilma's AH undercutting structure. Note that in order for Wilma to accept Bob's defense she does not have to change her opinion about Bob's ethos, but rather to give up the attacking character of her move (1-b).

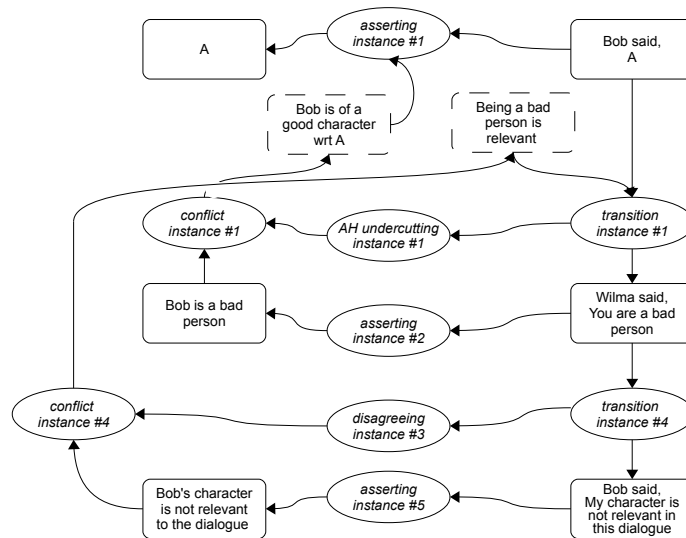


Figure 3. The strategy of stating irrelevance of a character to how it is discussed (to a dialogue type).

3.2.3. Character and dialogue relevance

The second CQ provides also another strategy for the speaker's defense. The relevance described in this question can be interpreted dialectically meaning that the allegation of bad character is not an appropriate move in a given type of a dialogue (such as in critical discussion or inquiry where "personal matters should not be considered when judging the argumentation" [14, p.276], while it is a reasonable argument in legal dialogue [14, pp. 278–281] or political debate [14, p.288]). Consider another simplified dialogue:

- (3) Bob said, My character is not relevant in this type of dialogue.

Our model explains what the differences are between this defense strategy and the previous ones on a deep, ontological level. The content of Bob's response (3) "Bob's character is irrelevant to the dialogue type" is in conflict with the condition on the dialogue rule governing the transition between the first move (1-a) and the second move (3) (see the node *transition instance #1* in Fig. 3). Thus, in this case the target of Bob's defense is a transition in a dialogue (*transition instance #1*) and not an undercutting AH conflict structure (*conflict instance #1*) as it was a case in the previous strategy referring to the relevance of attacking the character. Yet indirectly this response also affects AH conflict, for the transition is illocutionarily connected to the conflict.

3.2.4. Compound character defense

The last critical question does not constitute a separate character defense strategy, but a compound response consisting of two moves of attacking person:

- (4) Bob said, Well maybe, but *B* supports *A*.

In this dialogue Bob concedes that he is a bad person (or does not disagree), but then provides a premise *B* supporting what he claimed previously (i.e. *A*). In other words, he

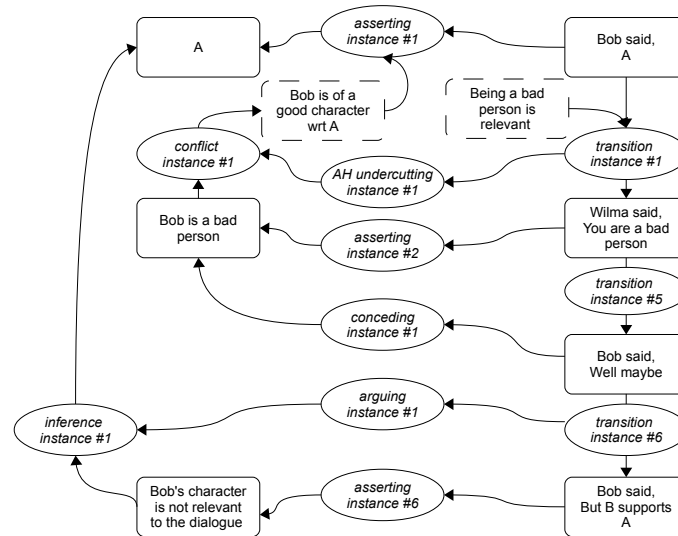


Figure 4. The ontological components of a dialogue with a compound character defense.

changes the subject of the dialogue again from discussing his character to “non-ethotic” facts considered before. As a result, the diagram in Fig. 4 depicts two routes for accepting *A*: the ethotic route that leads to the acceptance of *A* on the basis of the speaker testimony (e.g. a jury can accept some fact just using the witness testimony), and the “logos” route that leads to the acceptance of *A* on the basis of reasoning (e.g. a conduct should not be judged on the basis of a testimony, but some non-testimonial evidences [14, p.277]).

4. From argument scheme to dialogue protocol

In this section we introduce a dialogue game, the Ad Hominem Dialogue, or AdHD, that provides explicit support for making and responding to AH moves. The protocol proposed here consists of a “minimal” number of rules to handle AH dialogues, i.e. only those rules that allow normal progression of argumentative dialogue which includes execution of AH attacks and defense are taken into account. Two features are indispensable for AdHD. The first to support dialogical manoeuvres using schemes, and the second is to support dialogical manoeuvres using undercuts. To our knowledge, the only other dialogue game which supports the first feature is ASD [10], and the only one that supports the second is Prakken’s protocol [9]. No previous game, to our knowledge, provides both.

Following simple dialogue games such as CB [13] and DC [7], AdHD adopts a small lexicon of locutions, comprising claims, concessions, retractions and challenges – these latter moves elicit arguments through the use of an extra-dialogical notion of *immediate consequence*, which in CB and DC is assumed to be propositional entailment, but is bracketed to allow, in principle, for stronger systems of inferencing (in ASD [10] for example, an extended version is offered which admits defeasible inference governed by argumentation schemes). This basic lexicon is then extended with two moves which are designed specifically to handle the dynamics of Ad Hominem. CharAtt allows one player to attack the character of another. The attack is directed at a specific instance of character, i.e. the character of a speaker with respect to their utterance of some specific

proposition. Ideally, such a specialisation would refer to a predicatised notion of character, capturing the relation between the speaker and the proposition, but this would require moving the entire underpinning of the game from propositional to predicate logic. Such a wholesale extension in the complexity of the game is not warranted, however, because for our present purposes, there is no need to handle the generality that could be expressed by the predicate – all we need is a guarantee of a unique proposition of credibility for each speaker utterance. This is particularly appropriate because in fact speakers very rarely refer directly to assumption of good character, but rather to a related proposition – a speaker is more likely to say, *You're an idiot* rather than *You are of bad character*. As a result, the CharAtt move takes as a parameter a single proposition which, to identify uniquely, we relativise to an utterance. Nothing of importance in the current version of AdHD hangs upon this decision. A character attack on an utterance of a is thus formulated CharAtt(\neg ch $_a$). Finally, players are permitted to defend in response to such attacks through the CharDef move. As we have seen in section 3, there are, according to Walton's formulation, three distinct ways of responding. In terms of the dynamics of a dialogue, however, each of these three ways of responding play the same role: each has the same locus of activity in the structure of a dialogue; each has the same effect on the commitments of the participants; and each has established the same position from which a dialogue can proceed. All that differs between them is the type of the content. As a result, we define the move simply as CharDef(ch $_a$), and again ch $_a$ is often some other proposition that supports the character of the speaker.

Locution Rules

- L1. Claims** Claim letters, a , b , c , ..., are permissible locutions, as are truth functional compounds of claim letters.
- L2. Concessions** 'Concede(a)' is commitment bearing agreement to a claim.
- L3. Retractions** 'Retract(a)' is the withdrawal of a claim.
- L4. Challenges** The challenge 'Why(a)?' requests some claim that can serve as a basis in (a possibly defeasible) proof for S.
- L5. Character Attacks** 'CharAtt(\neg ch $_a$)' is an attack upon ch $_a$, the character of the speaker with respect an utterance with propositional content a .
- L6. Character Defenses** 'CharDef(ch $_a$)' is a defense of ch $_a$, the character of the speaker with respect an utterance with propositional content a .

The dynamics of AdHD are captured using structural rules which capture obligations imposed upon participants as a result of the type of their utterances, and commitment rules which capture obligations imposed as a result of the content of their utterances. In AdHD, players alternate their moves; they must respond to a challenge by either retracting or defending by providing some argument in support of the challenged proposition; they must concede or defend their character if it is attacked, or else attack the character of the opponent who has attacked their character (a proposition which, following the reasoning above, we refer to as \neg ch $_c$); and they must concede or challenge a character defense or, once again, attack the character of their opponent in providing that defense;.

Dialogue Rules

- R1.** Each speaker takes his turn to move by advancing one locution at each turn.

- R2.** ‘Why(a)?’ must be followed by (i) ‘Retract(a)’, or (ii) ‘Claim(b)’ where a is a consequence of b .
- R3.** ‘CharAtt($\neg ch_a$)’ must be followed by (i) ‘CharDef(ch_a)’, or (ii) ‘Concede($\neg ch_a$)’, or (iii) ‘CharAtt($\neg ch_c$)’.
- R4.** ‘CharDef(ch_a)’ must be followed by (i) ‘Concede(ch_a)’, or (ii) ‘Why(ch_a)?’ , or ‘CharAtt($\neg ch_c$)’.

AdHD is a ‘silence-assumes-consent’ type of game [7], so, *ceteris paribus*, claims commit both their speaker and hearer. The *ceteris* are the possible challenges that a hearer may make in response to a claim - if a claim is challenged or character-attacked, the hearer does not incur commitment to the content. In this way, a hearer can block the imposition of commitment upon them through two routes: via logos (with a challenge) or via ethos (with a character attack). Concessions are agreements which do not incur any commitment on the speaker, and retractions allow a speaker to delete commitment from their store. Challenges have no direct impact on commitment, other than blocking a hearer’s commitment to a preceding claim. Rather, they are commitment elicitors, or more precisely, position elicitors, since they may also elicit a statement of no-commitment. Character attacks, like challenges, have no direct impact upon commitment, and character defenses, just like claims, impose commitment on the speaker, and, *ceteris paribus* on the hearer.

AdHD, like most other commitment-based dialogue games, includes a mechanism for ‘chaining,’ i.e. for connecting up syllogisms to allow one participant to draw another along a path of several argumentative inference steps. The rule that encapsulates this mechanism (rule (iv) below) is taken directly from CB. However, this is not sufficient, as it provides only a mechanism for chaining along logos steps. If a player issues a character attack, and then some series of logos steps are played that do indeed establish the challenged player’s credibility and thereby successfully defend against the attack, a further mechanism is required to re-introduce the disputed claim at the point that the disputed credibility is established. This is the final commitment rule in the set summarised below:

Commitment Rules

- C1.** After a player makes Claim(a) or Concede(a) or CharAtt(a) or CharDef(a), its content a is included in the speaker’s commitment store. Moreover, a is also included in the hearer’s commitment store, unless he immediately challenges a or attacks the speaker’s character with respect to a
- C2.** After the retraction of a , its propositional content a is deleted from the speaker’s commitment store.
- C3.** ‘Why(a)?’ places a in the hearer’s commitment store unless it is already there or unless the hearer immediately retracts his commitment to a .
- C4.** Every statement that is shown by the speaker to be an immediate consequence of statements that are commitments of the hearer via some rule of inference, then becomes a commitment of the hearer’s and is included in their commitment store.
- C5.** No commitment may be withdrawn by the hearer that is shown by the speaker to be an immediate consequence of statements that are previous commitments of the hearer.
- C6.** If a commitment to the character ch_a of a speaker’s credibility in claiming a is shown by the speaker to be an immediate consequence of statements that are commitments of the hearer, then a is included in the hearer’s commitment store.

5. Example

failblog.org is a popular website of schoolboy humour, pranks, images and videos. The comments sections underneath each post are well-used, with plenty of disagreement, irrelevance, abuse and downright stupidity: in short, a perfect source for real ad hominem arguments. The following is taken verbatim from comments following a video of a woman who appears to drive an SUV particularly aggressively². Amongst the 200 or so comments is this exchange:

- (5) a. MissLovinTheFail: I've said it before, and I'll say it again, most women have no business driving a SUV.
- b. Shuttle: Because she couldn't have done the same thing in a car. Idiot.
- c. MissLovinTheFail: Ahh butthurt Shuttle, you drive one don't you?
- d. Shuttle: No. But I can just as easily kill someone with my car as I could with an SUV. Wow, you're such a genius.
- e. MissLovinTheFail: Wow you're such an uptight douchebag. It was meant to be a joke, but I wouldn't expect you to pick up on that. You know, with your total lack of a sense of humor and all.

Example (5), the SUV example, is very rich, with at least eleven distinct locutions and at least four (probably six) ad hominem moves. To narrow our focus, let us take the first part of (5-b) (excluding the AH attack “*Idiot.*”), and the entirety of (5-c) and (5-d). In what follows, we use M to refer to the author of (5-a) and (5-c), and S to refer to the author of (5-b) and (5-d). This still leaves us with a complex network of arguments and ethotic attacks, which is summarised in Figure 5.

S's initial utterance at (5-b) is an ironic assertion, so the locution is connected to the negate of the surface content, which expresses a counterargument to the position expressed at (5-a), explicitly giving a reason for the contrary. At (5-c) M attacks her character (in this case via bias – an account of different types of ad hominem is an issue for future work, here we just see it as direct AH). The propositional content of her attack is linked via a conflict (established by the transition) to the assumption of S's good character on the initial illocutionary connection (instance #1). The first of S's character defense moves takes the form of a direct rebuttal (following CQ1 from section 2): her locution is connected to its propositional content which is in conflict with M's character attack content. The second of S's character defense moves is to provide an alternative argument in support of her conclusion (i.e. CQ3) – the premise is the propositional content of her assertion and the argument is captured at inference #1, established by the transition (#3). Finally, S's last move is to respond to M's character attack with a character attack of her own. The attack is once again ironic, so the propositional content is the negate of the surface content; that content conflicts with the assumption of M's good character on her assertion (#2), and that conflict is again established by the transition (#4).

Somewhat surprisingly this example also complies almost fully with the protocol (surprising because ADHD, like all other extant dialogue games, is driven by theoretical concerns rather than empirical study). The only divergence from the protocol is in S's move at (5-d) which comprises three consecutive locutions. The protocol could be made

²<http://failblog.org/2012/03/28/epic-fail-fail-nation-messing-with-an-suv-fail/#comment-1634362>

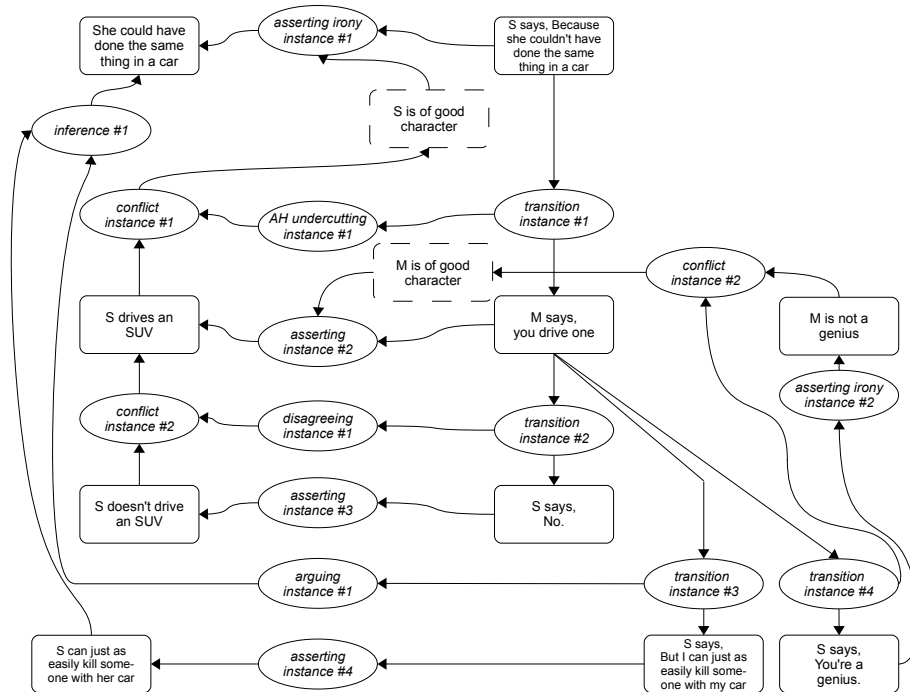


Figure 5. An analysis of the SUV example

Locutions	S's commitments	M's commitments
S1: claim(c)	c	
M2: charAtt($\neg d$)		$\neg d$
S3: charDef(d)	d	
S4: claim(e)	e	
S5: charAtt($\neg g$)	$\neg g$	

Table 1. Commitments store in the example

more sophisticated by allowing multiple locutions at each move, but instead we can here see each of the three locutions as possible terminations of the dialogue. Using the propositional letters c for *She could have done the same in a car*; d for *S does not drive an SUV*; e for *S can kill someone just as easily with a car*; and g for *M is a genius*, we can map the dialogue as in Table 1.

After M2 follows S1 by dialogue rule R1, and updates S's commitments by commitment rule C1. S3, S4 and S5 meet the conditions of dialogue rule R3 under conditions (i) (S3 and S4) and (iii) (S5), and S takes on commitment to each of d , e and $\neg g$ by rule C1. If after any of S3, S4 or S5 M does not challenge or character attack, she would have, under commitment rule C6, to take on commitment to either d , e or $\neg g$ respectively. Perhaps unsurprisingly we can see from the continuation of the text in (5-e) that she opts for another character attack.

Conclusions

In this paper, we have argued that ad hominem is a useful argumentation technique, and that attacking and defending participants' ethos demands a substantive change in the way that dialogues are understood and modelled from the entirely logos-oriented models developed heretofore. By using Inference Anchoring Theory, we can understand why the critical questions associated with the ad hominem scheme presented by Walton are the way they are, and we have shown how those critical questions can be used as a foundation for developing a dialogical model of ad hominem. That model is expressed as the game AdHD which permits explicit identification and use of AH structures, and, concomitantly, of defenses and responses to such structures. The paper is the first computationally oriented approach to modelling (rather than proscribing) fallacy in dialogue, and paves the way to exploring both other aspects of this and other subspecies of ad hominem, and also other fallacies entirely, inspired by Walton's programme of research in this area. With the analysis in place, we also have a framework into which to locate processes that might judge fallaciousness – encapsulated within a black box, opaque to the functioning of the system, but dependent on the context, such processes, whether human or computational or a mixture of the two, can be adduced in practical systems of dialogue support and analysis to help identify the boundaries of good reasoning.

Acknowledgements

We gratefully acknowledge the support of EPSRC under grant EP/G060347/1, and the support of the Polish National Science Center for Katarzyna Budzyska under grant 2011/03/B/HS1/04559.

References

- [1] S. Barker. *The Elements of Logic*. New York: MacGraw-Hill, 1974.
- [2] M. Beardsley. *Practical Logic*. New York: Prentice-Hall, 1950.
- [3] K. Budzyska. Argument analysis: Components of interpersonal argumentation. In *Proceedings of the COMMA 2010*, 2010.
- [4] K. Budzyska. Circularity in Ethotic Structures. *Synthese*, accepted for publication, 2012.
- [5] K. Budzyska and C. Reed. Whence inference? In *University of Dundee Technical Report*, 2011.
- [6] F.H. van Eemeren and R. Grootendorst. *A systematic theory of argumentation: The pragma-dialectical approach*. Cambridge University Press, 2004.
- [7] J. D. Mackenzie. Question Begging in Non-Cumulative Systems. *Journal of Philosophical Logic*, 8:117–133, 1979.
- [8] S. Modgil and T.J.M. Bench-Capon. Metalevel Argumentation. *Journal of Logic and Computation*, 2010, to appear
- [9] H. Prakken. Formal systems for persuasion dialogue. *Knowledge Engineering Review*, (21):163–188, 2006.
- [10] C.A. Reed and D.N. Walton. Argumentation schemes in dialogue. In *Dissensus and the Search for Common Ground (Proceedings of OSSA 2007)*, 2007.
- [11] C. Reed, S. Wells, K. Budzyska, and J. Devereux. Building arguments with argumentation: the role of illocutionary force in computational models of argument. In *Proceedings of the COMMA 2010*, pages 415–426, 2010.
- [12] J.R. Searle. *Speech Acts: An Essay in the Philosophy of Language*. Cambridge University Press, 1969.
- [13] D. N. Walton. *Logical Dialogue Games and Fallacies*. University Press of America, 1984.
- [14] D. N. Walton. *Ad Hominem Arguments*. Tuscaloosa, University of Alabama Press, 1998.
- [15] D. N. Walton. Formalization of the Ad Hominem Argumentation Scheme. *Journal of Applied Logic*, 8:1–21, 2010.
- [16] D. Walton, and T. Gordon. Modeling Critical Questions as Additional Premises. In *Argument Cultures: Proceedings of the 8th International OSSA Conference*, 2011.