Reinventing Forgiveness: A Formal Investigation of Moral Facilitation

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Abstract. Reputation mechanisms have responded to the ever-increasing demand for online policing by "collecting, distributing and aggregating feedback about participants' past behavior". But unlike in human societies where forbidden actions are coupled with legal repercussions, reputation systems fulfill a socially-oriented duty by alerting the community's members on one's good standing. The decision to engage in collaborative efforts with another member is chiefly placed in the hands of each individual. This form of people empowerment sans litigation brings forth a moral concern: in human-human interactions, a violation of norms and standards is unavoidable but not unforgivable. Driven by the prosocial benefits of forgiveness, this paper proposes ways of facilitating forgiveness between offender and victim through the use of personal 'moral' agents. We suggest that a richer mechanism for regulating online behaviour can be developed, one that integrates trust, reputation *and* forgiveness.

1 Introduction

Recently, there has been a push towards facilitating forgiveness in a number of fields such as law, psychology, theology and organizational management [5]. This is motivated by the homeostatic potential that forgiveness offers both to victim and offender as members of an autonomic society. In spite of the ongoing arguments on its suitability in certain situations, forgiveness, encompassing the *prosocial decision to adapt a positive attitude towards another,* warrants further investigation for its use in regulating online behavior. In this article we consider its role in online communities where, similar to physical worlds, certain forms of conduct that are expected of a member are frequently violated.

At present, the 'management' of human behavior online has been placed in the hands of technology. A number of trust and reputation mechanisms have emerged that operate *quantitatively* by "collecting, distributing and aggregating feedback about participants' past behaviors" [21]. But despite their success, dishonest members have persisted and found new ways to trick the system [6, 13]. In developing complementary 'behavior-controlling' solutions, there is a need to continue

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uncovering the roots of this phenomenon. Until now, research has focused on addressing the implications of anonymity [10, 7]. The lack of social context cues is also considered another cause for investigation [3, 23]. We argue that in addition to the above contributors, the "quantification" of human behavior (i.e. performance ratings) removes important human coping mechanisms which in physical worlds add value to human relationships and provide closure during their disruption (i.e. the ability to apologize). For example, the act of issuing forgiveness alone is known to stimulate the offender into positive actions of repair [2, 11]. In the absence of forgiveness or reversal mechanisms, the offender is deprived of those reparative outlets. Moreover, punishing the offender for a low intent action (i.e. tarred reputation for accidentally delivering the wrong product) will often result in anger and low-compliancy behaviors [11], in our context possibly leading to withdrawal from the unjust community. Consequently, alongside the continuous quantitative enhancements of trust and reputation mechanisms, we aim at a more *qualitative* proposal. Informed by its prosocial effects, we are interested in a technology-mediated facilitation of forgiveness as a way to motivate prosocial behaviors online and inhibit harmful ones.

Our future focus on the subject of forgiveness is threefold: first, we aim to develop a formal computational model inspired by human forgiveness; second, to design a tool that supports rule violation reports and links victim to offender to facilitate forgiveness; third, for evaluation purposes, to conduct observations of human behavior over time. We begin addressing the first point by presenting the theory of forgiveness as the basis for a formal computational model.

In section 2 of this article we describe the context of our work 'DigitalBlush', in which our model of forgiveness will be embedded. Section 3 presents the subject of forgiveness from the perspective of philosophy and psychology. We go on in section 4 to discuss the positive motivations that work to overturn one's initial censure and to facilitate forgiveness. In section 5 and 6, we propose a theoretical design and application domain for a forgiveness model, envisioned to integrate with current trust and reputation mechanisms. Finally in section 7, we conclude with a discussion on future directions.

2 DigitalBlush: Setting the Context

DigitalBlush is grounded on the belief that shame and embarrassment, if experienced during online interactions, can control otherwise uninhibited human behaviors. The controller function of shame and embarrassment within human societies is the guiding force behind this conviction [22]. Given time, DigitalBlush aspires to evolve into a transparent emotional and socio-cognitive layer subsumed within greater human-human networked interactions. The two layers will materialize the experience of shame and embarrassment by (1) strengthening one's sense of self and others awareness, (2) bridging cultural differences, (3) accounting for gender variances, (4) attaching value to one's identity and reputation as such, and (5) displaying social implications in response to one's actions [for a full discussion see 24].

The aforementioned tactics are directed towards inducing emotion and implicitly controlling unwanted behaviors. The process of reaching such an objective is complex and involves many facets, including the consequences of a shameful action. Assuming

that one violates a standard and as a result experiences shame or embarrassment, what is the next natural progression within the cycle of emotion-reaction? According to the appeasement theory [12], the next progression, the relationship restoration between victim/observer and offender qualifies the very existence of embarrassment in the human species. Shame and embarrassment are followed by identifiable external signals (i.e. the blush) which in turn serve to appease and pacify observers or victims of social transgressions. Hence, the emotion display plays an important role in exposing the offender's violation acknowledgement. This acknowledgement may prompt sympathy or *forgiveness* from others during more serious transgressions and amusement during milder ones. Consequently, in the DigitalBlush setting, the interplay between one's acknowledgment and another's forgiveness is of paramount importance as it follows the natural cycle of emotion-reaction and extends even further than that to influence a fellow member's judgment. While DigitalBlush as a whole is not the focus of this article, our work on forgiveness will at times blend with shame and embarrassment as discussed in psychology.

Our work here considers a DigitalBlush community brought together in a distance learning setting. In this community, participants (i.e. students, professors and administrators) will connect with other members via their personal agents (see section 6 for more details). Each DigitalBlush member will participate in team activities such as project assignments and will carry certain responsibilities towards their fellow members. In the sections to follow, we will exemplify our forgiveness proposals through a number of hypothetical distance learning scenarios involving two members, Nick and Lidia.

We will be using several terms interchangeably. A 'violation of norms or standards', an 'immoral act', an 'offence' or a 'transgression' constitute of a rule being broken. The rules governing each community naturally vary and should be treated as independent factors (i.e. delivering a bad product in a transactional community vs. delivering a late assignment in a distance learning community). 'Observer' or 'victim' respectively refers to the witness or to the one harmed as a result of another's violation. The 'transgressor' or 'offender' is a member who violated a rule, may have harmed others in the process and who awaits their 'predicament' be that punishment, forgiveness or redemption from the observer or witness.

3 Forgiveness

3.1 A Formal Definition

Forgiveness is proposed to result from a *number of prosocial motivational changes which reverse one's initial desire to adopt negative strategies towards the transgressor* (i.e. revenge, avoidance). In this sense, forgiveness replaces malevolent motivations towards the transgressor with constructive and positive behaviors which work to reverse the initial censure [16]. The forgiveness process as described in psychology, is further illustrated in Fig. 1 where the offender, member *x* violates a rule with action *A*. Following victim *y's*, negative predisposition towards offending action *A*, six positive motivations collectively add up to possibly formulate

forgiveness. The positive motivations we consider are empathy, actions of repair, historical relationship of victim-offender, frequency and severity of past actions, severity of current action and intent (see section 4 for a full discussion). The definition proposed, employs a degree of freedom in long-term relationships as one may forgive a single transgression without explicitly reversing their attitude as a whole [16]. Likewise, while a certain violation may be forgiven, other past behaviors may still impede one's trust towards another. Despite popular definitions of forgiveness, forgetting, condoning, trusting or removing accountability are not necessarily considered to be a part of forgiveness [5].

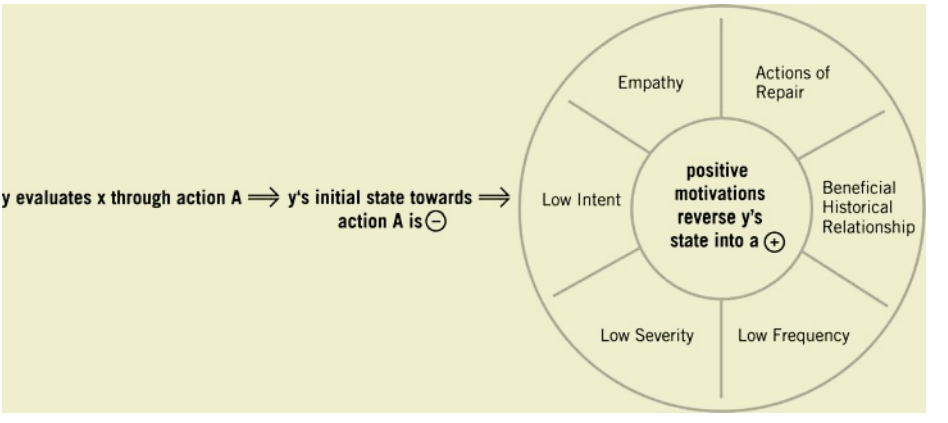

Fig. 1. A motivation-driven conceptualization of forgiveness where positive motivations add up to increase forgiveness

In the following discussion we adhere to an overarching moral tenet; in any social community, be that an agent environment or a human society, the transgressor and victim have equal value as people. The victim and the overall community value this tenet and as a result assess the transgressor's act rather than his/her worth as a person [9].

3.2 The Gray Areas

There are areas still unknown or controversial in nature on the subject of forgiveness. First, there are opposing arguments in granting forgiveness. On one hand, it has been empirically established that forgiveness may lead to constructive behaviors such as volunteering [11], attributed to the transgressor's reciprocal debt towards his 'benefactor'. This positive consequence may occur only when the transgressor takes responsibility and cares about his/her action. On the other end of the spectrum, it is argued that in the absence of punishment, the one in violation is spared of responsibility and is therefore encouraged to maintain a harmful position [9]. As a consequence, issuing forgiveness is risky and should be granted responsibly, with consideration for *relevant circumstances* surrounding the violation (e.g. the action's severity). Second, there is little known on what types of transgressions lead to forgiveness [5]. For example, there is no consensus on forgiveness in the event of a

confidant revealing a friend's secret to another. In the proposed model to follow, we find answers in the motivation-driven definition of forgiveness as described above (see section 3.1). We consider the 'relevant circumstances' (e.g. severity, intent, actions of repair, etc.) to accumulatively stimulate a number of positive motivations, as a result, replacing ones' initial negative inclination and summing up to form forgiveness. By this choice, we circumvent subjective judgments on the transgression's type by adapting a more quantitative and multivariate approach. In sum, we propose the following:

Proposal 1

- *x* violates *rule A*. Initially *y*, the observer/victim of *x's* transgression is inclined negatively towards *x*
- *y* assesses all the factors surrounding *x's* action-violation *A* and decides to issue forgiveness by applying a series of (+) positive motivations to his initial (-) negative state

Proposal 1, the formal statement of the forgiveness process, is encapsulated by Fig. 1. Going forward, we elaborate on the first proposal by presenting in detail the positive motivations at work, leading towards a proposal for a formulated model.

4 Issuing Forgiveness: Positive Motivations at Work

In this section, we present three central components of a forgiveness model. We exclusively consider the positive motivations at work. Justifying our choice, is the victim's initial disposition which automatically factors negative coping mechanisms such as vengefulness into the agent's/actor's state (*y's* initial judgment towards action *A* is negative).

4.1 Violation Appraisal

Observers/victims of one's transgression make certain attributions by accounting for a number of factors surrounding the offence. First, the severity of the current act is assessed. More severe violations lead to harsher judgments [1, 2]. Furthermore, a historical trail of one's past behaviors is compared against the current violation. Together, frequency and severity of past acts impact one's inclination to forgive [2]. Additionally, apparent intent leads towards more negative attributions with low intent actions supporting more positive attributions [1, 14]. The interaction between intent and forgiveness has even stronger consequences on the transgressor's side. Low intent actions followed by retribution against the transgressor may result in low-compliancy, anger and even retaliation. On the other hand, low intent actions followed by forgiveness often motivate the transgressor into reciprocal actions of repair [11].

Proposal 2

- *y* assesses *x's* action by (severity) AND (frequency/severity of *x's* historical actions) AND (intent)

- *x* cares about action *A*. Upon receiving forgiveness, *x* repays *y* by offering reparative action *B*
- *x* cares about action *A*. Upon receiving retribution from *y*, *x* engages in a lower number of future interactions with *y*

Hypothetical example: Nick delivers a team assignment two days after its' due date. His tardiness will likely impact the overall team's grade. Although his action is considered very serious by his peers (high severity action), Nick has been timely during his past assignments. In addition to that, the previous week he had a number of school exams contributing to his tardiness (low intent). Upon receiving forgiveness from his teammates, Nick offers to do more work during the next assignment (reparative action).

4.2 Reversal and Restitution

Apology and restitution together constitute a strong partnership facilitating and even predicting forgiveness [25]. Furthermore, it is also possible to reverse one's immoral act by performing a good deed [2]. Inferred from the appeasement theory (see section 2), a truthful apology or a good deed, parallel to a disconcerted façade can in fact pacify the observer or victim and therefore lead to forgiveness. However, reversing one's violation with a reparative action brings up an important issue. Inevitably the weight of a good deed against a severe and frequently performed violation will have to be formulated.

Proposal 3

- *y* issues forgiveness if *x* offers (an apology) AND/OR (reparative action *B* >= action *A*)

Hypothetical example: Nick contributes poor quality work for his final team project. Upon being confronted by his teammates, Nick apologizes (apology) and spends the next few days rewriting his team contribution (reparative action). Later in the week, he receives an email from his teammates thanking him for his work (forgiveness).

4.3 Pre-existing Factors: Historical Interactions and Personal Dispositions

There are several pre-existing factors positively predisposing the observer/victim towards the transgressor. First, prior familiarity and a relationship of commitment with the transgressor increase the likelihood of forgiveness [17]. Good friends or successful business partners rely on a richer and mutually-rewarding history fostering a propensity towards forgiveness. Second, empathy, one's emotional response towards another's affect [8] is regarded as a mediator, appeasing the victim and facilitating forgiveness. Empathy is evoked by transgressors' apologies among others, is a predictor of forgiveness and its intensity has been found to positively correlate to the extent of forgiveness the victim issues for the transgressor [18]. But even more pertinent to DigitalBlush, empathy manifests in embarrassment to form 'empathic

embarrassment', a milder form of embarrassment 'incurred' by imagining oneself in another's place. Empathic embarrassment has several determinants:

- The salience of the transgressor's embarrassment controls the degree of felt empathic embarrassment. Visibly embarrassed transgressors elicit more empathic embarrassment from others.
- The emotion intensifies when the victim is somewhat familiar to the transgressor. The nature of past interactions (i.e. cooperative vs. competitive) appears to have little influence on the emotion experience although males tend to be more empathic towards competitive partners perhaps supporting known gender role differences, see e.g. [4].
- We foster stronger feelings of empathy towards those who are most similar to us in terms of personality or characteristics (i.e. a colleague or a cultural compatriot).
- The observer's propensity to embarrassment determines to a great degree the empathic embarrassment s/he may experience. A highly 'embarrassable' observer will experience increased empathic embarrassment [19]. At the same time, when the salience of the transgressor's embarrassment is visibly intense, propensity towards embarrassment is overpowered and plays a more secondary role [15].

If we consider the intricacies of judgment and violation appraisal (see section 4.1), an extensive history of severe violations and apparent intent should extinguish feelings of empathy or empathic embarrassment altogether. At the opposite end, observers who share a similar history of harmful behaviors with the transgressor may be more empathic and consequently more forgiving.

In sum, empathy and empathic embarrassment both share the same function mediated by different factors, a truthful apology versus a genuine façade respectively. Similar to the workings of empathy, a transgressors' visible embarrassment embodies an apology by acknowledgement of his/her act. Consequently, the transgressor's expression-genuineness will induce empathic embarrassment the same as a truthful apology will evoke empathy. On the basis of the previous discussion we propose the following:

Proposal 6

- *y* will issue forgiveness if *y* and *x* have had (a number of prior interactions) AND (*x's* past actions have been beneficial to *y*)

Hypothetical example: Nick contributes medium quality work (medium severity action) for his final team project. His teammates know that in the past, he has always paid attention to detail (past beneficial interaction) and as a result decide he should be forgiven.

Proposal 7

- The extent of *y's* forgiveness will vary by the (degrees of empathy/empathic embarrassment *y* feels for *x*)

- *y* will experience empathic embarrassment if (*x's* embarrassment is visibly intense) AND/OR (if *y* has met *x* before) AND/OR (if *x* shares similar characteristics to *y*) AND/OR (if *y's* propensity to embarrassment is high)
- *y* will feel more empathy for *x* if (*y's* past actions are similar in nature to *x's* current violation)

Hypothetical example: Nick contributes moderate quality of work for his final team project (medium severity action). Upon confrontation, his embarrassment becomes visibly intense (visible acknowledgment). Lidia who has experienced a similar situation in the past (similar past history) feels empathy towards Nick and as a result is more inclined to forgive.

In the section to follow, we discuss the complexity of the motivations' interactions through an example in psychology. In overcoming this challenge, we propose a solution that permits multiple interactions between motivations (e.g. empathy) and their constituent parts (e.g. visible acknowledgment) but also accommodates their variable weights.

5 Motivation Interactions Towards a Formal Model Proposal

5.1 Illustrating the Complexities

The theoretical work we have considered so far, with the exception of Boon and Sulsky's study [1], has measured each motivation's workings separately. A need prevails for a more elaborate model that describes the weights and interactions of each motivation. We briefly revisit Boon and Sulsky's work to better illustrate the challenge we are faced with. In an experiment examining forgiveness and blame attributions, the three judgment cues of *offense severity*, *avoidance* and *intent* were measured. Results of this study indicated different weights for each of these judgment cues, depending on blame or forgiveness attributions. More specific to our current interest, in forgiveness judgments, there was less inter-rating subject agreement in cue weights and interactions [1]. Most notably, through this example we are able to glimpse at the complexity of those interactions and identify an important issue: *how does one weigh one motivation against another and which one exerts the most influence?*

5.2 Model Proposal

In addressing the previous question, we accommodate the motivations, their underlying components and relevant weights in a model that functions as a shared-decision, illustrated in Fig. 2.

In the theoretical model shown in Fig. 2, the *judgment of offence* carries the most weight. Following its assessment, a forgiveness percentage is calculated. Next, the remaining three motivations (historical relationship, empathy and actions of repair) are calculated similarly and then compared against the judgment of offence percentage (see appendix A, tables 1-4). We justify this choice with the following example: If a truthful apology follows a low offence judgment, forgiveness may be possible, while the same apology following a high offence judgment may not suffice.

Crucially, the valence of the various motivations and their composite parts, will work in two opposite ways, increasing or decreasing the probability to forgive.

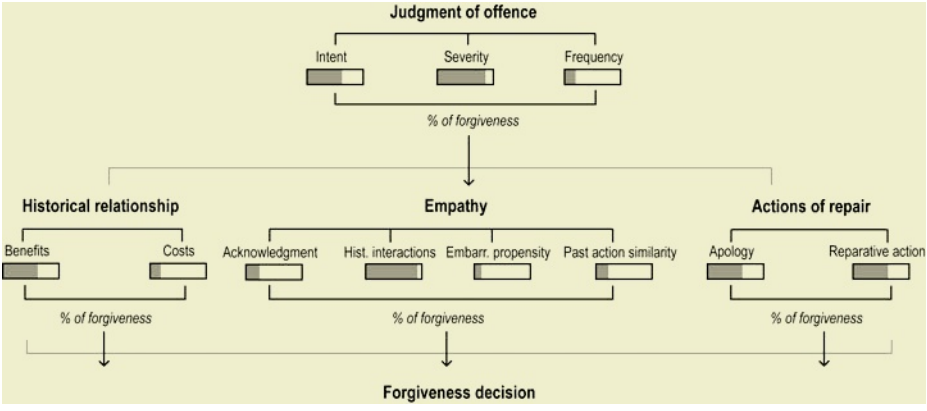

Fig. 2. A theoretical model of forgiveness: Each motivation contributes in degrees towards or against forgiveness

5.3 Context-Dependent Violations

Taking a brief look at ongoing online communities, it is apparent that what constitutes a violation in one, may not be considered a severe offence in another. A community driven by economic motives such as e-Bay may not find someone's contrived personality as serious as an emotional-support community. Each forum may experience a number of context-dependent violations making a rule-based model such as the one of forgiveness, reliant on context.

We employ a user-centered approach to address this issue. We plan to distribute two surveys to end users of our distance learning community. One will elicit possible violations through a series of open ended questions while the other will request users to attribute quantitative forgiveness ratings on the dimensions of intent, severity and frequency. These results, representing the community as a whole, will inform us in two ways. First, the list of given violations will encompass the community's rules. Second, the consensual judgment ratings (intent, severity, frequency) will be integrated into the 'judgment of offence' table (see appendix A, table 1). As a result, the final computational model will in part rely on violations users of the community have identified and judgment ratings as perceived by the community.

6 Application Domain and Platform Design

We employ the term *Socio-Cognitive grids* for our platform design and tool facilitation. This definition allows us to consider both resources of networked computing and human participants as constituent parts of a single, unified grid [20]. Consequently, the DigitalBlush community will be brought together in a distance learning setting. Participants of this community (i.e. students, professors and

administrators) will connect with other members via their personal agents termed 'moral agents' (see Fig. 3). Each DigitalBlush member will perform team activities such as project assignments and will carry certain responsibilities towards their fellow members. Among other possibilities, in the context of this community a dishonest exchange of information (i.e. not delivering a promised assignment) will constitute a violation.

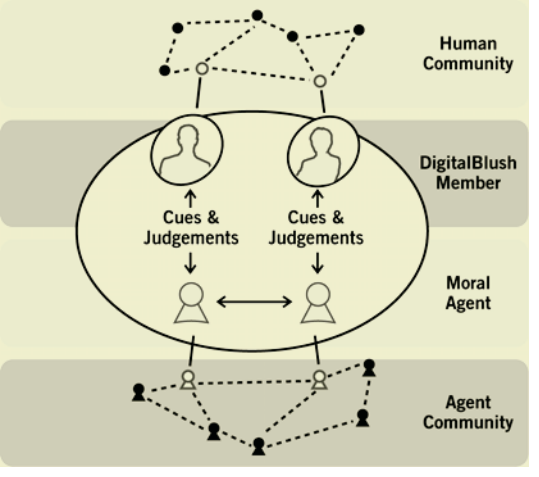

Fig. 3. Networked-Interaction between two actors where their moral agents promote cues which are lost during computer-mediated communication and support prosocial judgments

Our platform will support a number of exchanges. (1) Communication will be maintained across time, synchronously and asynchronously. (2) Each member will be represented in the community by their personal moral agent. (3) Moral agents will work as intelligent communicators. As illustrated in Fig. 3, they will carry social cues from one member to another and in reverse. Social cues will transmit emotional expressions from the sender and as a result they will support emotion interpretation by the receiver. But more to our current interest, moral agents will employ intelligence acquired over time to advise their human counterpart when forgiveness is appropriate (see Fig. 4). For example, in a low severity offence, a moral agent will assess the interaction partner's historical information and communicate a moral judgment to its human end. Ultimately, forgiveness will be issued by the human participant, making the role of the agent primarily one of intelligent and prosocial facilitation.

Hypothetical example: Nick's agent delivers low quality work to Lidia's agent. Upon receiving the work deliverable, Lidia notifies her agent about the violation. Her agent presents her with the benefits she has had from her collaboration with Nick (historical relationship), reminds her of a similar offence she had committed a few months ago (similarity of past actions) and that this incident is Nick's first offence (frequency). Lidia reconsiders her position and decides to give Nick another opportunity (reparative action).

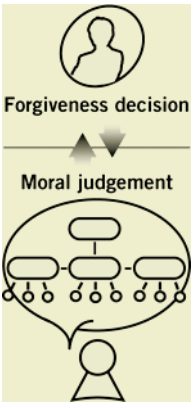

Fig. 4. Forgiveness facilitation: The agent carries its moral judgment to the actor who conveys back to his agent a possible forgiveness decision

7 Summary and Conclusions

To summarize, this article presented forgiveness in light of the prosocial and healing benefits it brings to human societies. We proposed the inclusion of forgiveness online as a way to encourage prosocial behaviors both in the victim and offender. The motivation behind our work is the reparative nature of forgiveness in some cases, while the destructive consequences of its absence in others. We went on to discuss the formation of forgiveness by the collective 'accumulation' of positive motivations. Resulting from this definition, we laid the foundation for a computational model, additively shaped by the motivations' interactions. Finally, we presented the preliminary design for a facilitation tool of forgiveness where agents' judgments are informed by historical, pertinent to the offence information and then effectively communicated to their human ends.

The objective of this article was to discuss the constituent parts of forgiveness and to bring forward this neglected but yet significant topic. Although psychology offers positive prospects for forgiveness applications, we cannot neglect the possible challenges we may face when implementing and integrating such a model in a computer-mediated environment. First, forgiveness may encourage harmful behaviors by withdrawing well-deserved punishment. As in many applications, users may 'hijack' the system and find ways to manipulate it to their advantage. Therefore, a coherent computational model of forgiveness is vital as well as responsible and careful facilitation. Second, colloquial beliefs of forgiveness demonstrate the confusion between forgiveness and other consequential ramifications. Forgiveness does not necessarily absolve one from their past harmful actions. It may be coupled with punishment or other mitigating reactions. We intend to address this second point with the design of clear and communicative language during agent-to-human facilitation. Third, the 'collection' and presentation of judgment factors may enhance prosocial decisions during offences that warrant forgiveness but they may have the opposite effect during severe offences that are well-deserving of punishment. Online users are overall more uninhibited and hostile [3, 23] compared to their offline

conduct. One could clearly argue that due to this online disposition, higher severity offences emphasized by moral agents' assessments may support unjustifiably severe punishments. Although this argument is hypothetical, it can be adequately inferred by the current literature and its consequences should be accounted for. Concluding, we end this article by acknowledging the challenges we face and at the same time by emphasizing the promise of our proposal, where socio-cognitive and affective mechanisms may promote prosocial gestures amongst online members, ultimately contributing to a genuine social cohesion.

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Appendix: A

Table 1. Judgment of Offence

#	1	2	3	4	5	6	7	8
Intent	++	++	++	++	--	--	--	--
Frequency	--	++	++	--	--	++	++	--
Severity	--	++	--	++	--	++	--	++
Forgiveness	%	%	%	%	%	%	%	%

Table 2. Repairative actions

#	1	2	3	4	5	6	7	8
Apology	++	++	++	++	--	--	--	--
Reparative Action	++	--	++	--	++	++	--	--
Judgment of Offence	++	++	--	--	++	--	++	--
Forgiveness	%	%	%	%	%	%	%	%

Table 3. Relationship

#	1	2	3	4	5	6	7	8
Benefits (social, economical)	++	--	++	--	++	--	++	--
Costs	++	++	++	++	--	--	--	--
Judgment of Offence	--	++	++	--	--	++	++	--
Forgiveness	%	%	%	%	%	%	%	%

Table 4.1. Empathy

#	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Visible Acknow.	++	++	++	++	++	++	++	++	--	--	--	--	--	--	--	--
Past hist. interact.	--	--	--	--	++	++	++	++	++	++	++	++	--	--	--	--
Embar. propen.	--	--	++	++	--	--	++	++	--	--	++	++	--	--	++	++
Sim. past actions	--	++	++	--	--	++	++	--	--	++	++	--	--	++	++	--
Offence Judgm.	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++
Forgiv.	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%

Table 4.2. Empathy

#	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Visible Acknow.	++	++	++	++	++	++	++	++	--	--	--	--	--	--	--	--
Past hist. interact.	--	--	--	--	++	++	++	++	++	++	++	++	--	--	--	--
Embar. propen.	--	--	++	++	--	--	++	++	--	--	++	++	--	--	++	++
Sim. past actions	--	++	++	--	--	++	++	--	--	++	++	--	--	++	++	--
Offence Judgm.	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Forgiv.	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%