



CONNECTIVITY IS NOT ENOUGH. SOCIALLY NETWORKED PROFESSIONAL ENVIRONMENTS AND EPISTEMIC NORMS

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Summary

With the help of key normative concepts borrowed from social epistemology (Goldman 1999) and work on epistemic duties and norms of justification (Steup 2001, Adler 2002) we want to clarify what is at the core of learning mediated through testimony. In socially networked professional contexts, assessment of the epistemic reliability of networked information is important: justification of knowledge acquired via the word of others has an intrinsic social and normative dimension. Whereas the former has been largely taken into account in today's (e-)learning theories based on social constructivism and connectivism, the normative dimension of justification is very much overlooked.

The enormous wealth of information on the internet, the myriad of seemingly contradictory statements and the distance that powerful media create between the information spread and the direct access to the facts and first-hand experience, poses challenges to learning theorists who want to formulate solid foundations for e-learning. This has led many to adopt theories, like socio-constructivism and connectivism, which put less focus on truth, accuracy and truthfulness in an effort to cope with dissenting opinions. We will argue that shying away from truthfulness as a central ingredient of learning is mistaken. You can have the benefits from today's e-learning theories without committing to the fallacies of relativism or constructivism.

In his article "Connectivism: A Learning Theory for the Digital Age", George Siemens rightly develops his connectivist theory on e-learning by rooting it in a theory of knowledge. In this paper, we show how e-learning through the internet, either in informal contexts or in more formal environments designed for organized e-learning, should be founded on (and de facto often satisfies) epistemic principles that govern the acquisition of knowledge by testimony. With the help of key normative concepts borrowed from social epistemology (Goldman 1999) and work on epistemic duties and norms of justification (Steup 2001, Adler 2002) we want to clarify what is at the core of learning mediated through testimony. In socially networked professional contexts, assessment of the epistemic reliability of networked information is important: justification of knowledge acquired via the word of others has an intrinsic social and normative dimension. Whereas the former has been largely taken into account in today's (e-)learning theories based on social constructivism and connectivism, the normative dimension of justification is very much overlooked. Influential authors like Stephen Downes (Downes 2008) tend to neglect the relevance of normative aspects of knowledge.

The problem of e-learning is the problem of acquiring knowledge by testimony writ large. On the one hand, we accept testimony – information acquired via personal contacts and information sources. Many of our beliefs originate in testimony and in being taught what to believe and to know, and our knowledge would be severely limited if we subtracted from it that portion which originates in testimony or in what we are taught. On the other hand, what justifies the resulting belief is the fact that our source of information asserts it and that the hearer trusts the speaker, but we typically have little grounds attesting to the reliability of our informants, and we are vulnerable to false reports, either because they are unreliable or because they are not truthful.

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Normative foundation of knowledge by testimony

Our research applies normative concepts borrowed from social epistemology to e-learning practices. We discern six general principles that inform testimonial acceptance (Adler 2002). After a short presentation of these principles we will give examples how they function in contexts of internet use, and why they matter to e-learning

First **interests and coherence**: we have enormous evidence, from our earlier years, of reliable testimony in its basic role of conveying information and much of this information we are able to directly verify simply by acting on it. Testimonial practice is regularly successful, and that provides it with continual confirmation. Occasional cases where we are lied to, or innocent errors, shouldn't be exaggerated: false or misleading information is more salient to us and disqualifies at least temporarily the source of information, but accurate testimony is the rule. Much of what we hear and read is dominated by our intellectual interests – interests that pertain to *what we want to know* and this creates an additional possibility for checking what we are told: the vast amount of information we gather from websites, for example, cannot be verified by students (and even where they can, it is only through further testimony), but there is a demand for coherence that provides a check on sharp deviations from accuracy.

Second: **reputation**. We know there are powerful institutional and social constraints on us to speak truthfully and reliably: when speaking falsely, we lose our reputation (contrast science journals with newspapers and gossip). The distinction between the scientific journal and gossip is that the former is subject to stringent constraints on false or deceptive reporting, and the sources are continuously checked by other experts, professional readers and scholars, whose standing in turn depends on maintaining a good reputation (see Green 2007 for an evolutionary account of reliable communication). Systems of peer review and replication (of experiments) provide checks.

Third: **testimonial competence**. We are taught a lot about how to deal with information obtained by teaching and learning. Because learning is so essential in social life we are taught how to share beliefs in reliable ways, how to be accurate in providing information, we acquire a competence about sharing factual reports. The fundamental values that are widely accepted and taught in this area are truthfulness (honesty), accuracy (both are, according to

Williams 2002, key intellectual virtues), and a concern for others. Since we want beliefs to be true, we want others to speak truthfully and we should do the same for them.

Fourth: **linguistic and communicative competence.** Truthfulness is fundamental to linguistic communication. It governs conversational exchanges, allows assertions to serve their function to spread knowledge. Lying and deceiving are risky and difficult, for one has to calculate a lie or deception that will succeed given repeated interaction with the person deceived. Part of our communicative competence is grasping constitutive rules for speech acts, and assertion is a key speech act, responsible for distributing knowledge. The knowledge rule for assertion -- One should assert p only if one knows that p (Williamson 2000) is now widely seen as constitutive for the assertoric practice, and modifications of the rule (assert p only if p is rationally credible – Douven 2006) accept the epistemic constraint on assertions.

Fifth: **prior plausibility.** We have background knowledge that grounds judgements and evaluations of prior plausibility because testimony, to be minimally acceptable, must not be dissonant with the hearer's beliefs. We are reluctant to accept testimonies with low prior plausibility (this was Hume's famous point about the implausibility of miracles, see Hume 1977:77).

Sixth: **the default rule's ethical dimension.** Any testimonial practice works under conditions that risk detection of error or falsification. If testimony often failed, it would be noticed and communicated and our reliance would either decrease or become more qualified. The fact that we maintain the default rule ('believe what you are told') reflects a history of reliable testimony.

Taken together, these factors show that the constraints on speaking truthfully and the fundamental role of truthfulness underwrite our practice of informational exchange through testimony. The default rule is a cooperative arrangement with an epistemic dimension: co-operators seek to supply other 'players' in the communicative game with evidence that they notice the other's acts and intentions and so are able to detect cheating.

These insights form a reliable framework to explain how we gain knowledge through the web. This approach re-centers the normative foundation of learning, by showing the intricate link of learning with the uptake of epistemic responsibilities and rights as the basis of testimony, thus placing the epistemological foundation of e-learning firmly outside the social constructivist framework.

Robustness of the web and reliability of information

Today, a lot of what we learn from others is mediated through the web. The fact that most of the information on the web is shared and used by millions, makes that it has become quite robust. Of course, many web pages actually contain errors, but the fact that they are accessed and used by many means that mostly, the info that you find on the net is very valid, whether it be weather information, information on museum opening hours, flight departures, etc.

In this sense, the internet's robustness offers a serious contribution not only to the availability, but also to the trustworthiness of the information. In Web 2.0, this is strengthened by a web of people: instead of connecting people to information, Web 2.0 maximizes interpersonal communications through the web. So, once you have established a good network through various web services, you can choose to trust either static information pages, or discussion forums, or chat sessions with known experts to solve a problem.

The part of our knowledge that is based on direct observation is only limited. A huge portion of our knowledge stems from other people, who act as our informants. It is their testimony we trust for a multitude of actions, and we have learned that in most cases this testimony is a reliable source. When I call my wife downstairs to ask if there is milk in the fridge, the chance it will not be there when she gave an affirmative answer is close to nil. A consistent failure on her part to be a trustworthy source for this kind of information would not go unnoticed in the relationship!

The same holds on the web: the sites we use on a daily basis, the newspapers we read, the forums we frequent: we have learned to trust them as information sources. Teachers keep complaining that students keep plagiarizing Wikipedia, while in the same time claiming that it is not a trustworthy source of information. Paradoxically, students tend to plagiarize Wikipedia because most of the time, the information that they find there is more than adequate enough for their daily information.

Of course, on the road to a more stringent, scientific knowledge, Wikipedia is not sufficiently precise. But that doesn't mean it is not trustworthy as such. Compare it with this: you really can trust me, that when you ask me for a glass of water, that is precisely what I will give you. However, I am not capable to indisputably determine that a given fluid is water. At most, I will do the cooking test and see if it does start to boil at 100° Celsius. But for my day-to-day practice, my knowledge about water perfectly fits.

The social organization of knowledge means that we can embed testimony in a network that will enhance the reliability and trustworthiness of our various sources of information. A good example is the map used on a car's GPS system. There could be errors in the map, but knowing that thousands have used the same map before you and knowing how to update your maps through the internet, you have every reason to trust the GPS system. Whereas a map by a famous cartographer lying in an highly reputed archive for years untouched, what are the guarantees that that map will be faithful? The high reputation of the cartographer alone cannot beat the reliability of a map embedded in an active social network, used and shared everyday by many people.

A lot of what we know is derived from what we are told or shown on websites. We can hold complex beliefs about the world, based on testimonial evidence and pieced together from a multitude of sources, but the strong social organization, supported by technological advances, makes sure that those beliefs are still "firmly rooted in reality". We will justify these beliefs indirectly, by reference to the supporting network that makes these beliefs credible and reliable. This can consist of input from stakeholder communities through social websites, input from experts through forums or chat sessions, certification procedures, accreditation, relying on continuously updated websites, consolidated scientific knowledge in online journals or at websites from academic institutes, accredited news agencies, challenging opinions in blogs etc. By informing us online we constantly update our beliefs and solidify the reasons we hold them.

Normative principles of testimony and the web

Interests and coherence sustain the reliability of what we learn through testimony, and form the basis of how informal learning through the use of the web works. Although rumours of false and deceitful information on the web are highly advertised, we all know that, generally speaking, we can rely on most of what we find on the web.

In social networks on the web, reputation is crucial. Through comments on forums, through blog posts, through contributions to websites, people earn a reputation as a valuable source of information on a particular subject. Many have turned experts in their leisure time, sometimes in fields only loosely connected to their professional occupation. This has

provided the web with a genuine pool of new knowledge, not to be found in textbooks or libraries, but passionately shared by enthusiasts. As long as they “validate” the web information on this topic, we feel that it is safe to use it.

For testimony to work, linguistic and communicative competence is required. It comes as no surprise that a substantial part of courses on e-learning and using social networks addresses this: how to engage in the internet in a credible way. Managing your web profile and identity, and the status of your web-presence are all skills taught to enable more effective use of the web, not in the least in an educational context.

That prior plausibility is a criterion to decide which information to trust means that the burden of proof lies on the shoulders of those that come with a divergent insight, not that there would be no place for dissenting opinion. Although this is often regarded as a recipe for conservatism and can be used to explain why people are reluctant to change their beliefs even when they are false, the requirement for prior plausibility is primarily a safeguard against hearsay and folly. It should be at the basis of any sound learning attitude, in particular in e-learning, where other trust-ensuring mechanisms like direct human interaction can be lacking. When a professional acquires new knowledge in an open or distance education context, it is important that the basic attitude is one of sticking to what one was taught in formal education and only to accept new insights after ample evidence (mostly testimonial) and critical review.

A good example is how in current family doctor training specific evidence-based methods are taught that help a doctor to interpret data in a scientifically coherent way (see e.g. Nicholson e.a. 2007). Since PubMed is open to the public, family doctors are often confronted with articulate patients that challenge their views by quoting not always very well understood information from it. By training doctors to help patients to put this information in the right perspective, both parties can gain from the improved accessibility of information on the web.

Knowledge is a duty

There is an implicit ethical dimension to the maintenance of epistemic qualities of our beliefs which in professional contexts often will be made explicit in mechanisms like accreditation, certification and quality control systems. A good example how this works is an EPO-test in a laboratory. Long gone are the days that a PhD in biochemistry would do a series of tests himself on a given sample to determine if traces of EPO are to be found. In fact, a lab that has the right accreditation to perform such tests will follow rigorous procedures to handle the samples, and the tests themselves are performed by complex machinery. Of course, the laboratory personnel operating these machines have a degree of insight in the processes at hand, but cannot really know if the machine’s algorithms are working right. They have to trust this to be the case. So, there is a lot of social organisation in place to obtain a reliable result.

First of all, these machines have been delivered by a certified company. Second, most modern machines have processes which do a self-control whether they work within specifications. Third, an independent company will calibrate and verify the machines at a certain interval. And most importantly, the results must be within expected ranges, according to prior plausibility. External auditors will at regular intervals audit the lab to see if it meets industry standards and contractual obligations. In no way, the knowledge whether a sample proves “positive” on EPO is the result of an individual insight of a particular researcher. It is a claim that can be made at the lab level on the basis of the correct follow-up of all procedures, of the certification process, of the accreditation, and in part also justified by the articles in peer-reviewed journals in which the laboratory head will defend the lab’s procedures.

Taking responsibility

In professional activities, acquiring and maintaining specific knowledge is a duty. Social interactions and professional collaboration are organized around the presumption that we assume responsibility to know what we need to perform our assigned tasks. Part of the ethics of skilful workers is that they maintain their epistemic qualities by engaging in follow-on training and keeping their knowledge base up-to-speed. The division of labor in modern enterprises means that each has the responsibility to make sure he can credibly claim to know the things others rely on for their tasks.

More and more, we have responsibilities to “know”, to have a sound and socially justified judgment on things that in many ways escape our direct apprehension and rely on a supporting social network consisting of expertise, consultancy, procedures, certification and accreditation. As a response to corporate scandals, the US Sarbanes-Oxley legislation and the European Basel II rule set have given a legal underpinning to the necessity to make explicit the normative justification of truth claims in a business and government context. (See e.g. Weill & Ross 2004) The so-called “separation of duty” required in handling of financial transactions is meant to avoid fraud by dividing responsibilities among workers. A CEO is held personally responsible for his annual balance (since a lot of people need to be able to rely their judgment on these figures). Although one can never absolutely claim that a CEO knows in the full sense of the word that his books are truthful, he ought to know it according to a socially accepted standard: he must have done everything reasonably in his power to ensure that a credible result is produced.

E-learning should focus on the need for the learner to take responsibility for knowledge. By making learners acquainted with certification and accreditation procedures, and by helping them to analyse the dependencies and liabilities of their knowledge, they become better prepared to assume responsibilities in a professional world where epistemic duties are divided and where they will be held accountable for knowing what they should know. The bottom line is that you must be able to say: “Trust me on this, I’ll make sure that I know what I am doing and I will give you credible evidence that I do this in a generally accepted way”.

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