

## Example Ethics Cases

These fictitious examples are intended to illustrate typical ethics issues that can arise. Depending on the circumstances, some may merit being brought to the attention of the appropriate IEEE ethics body for consideration of whether a violation of the IEEE Code of Ethics (CoE) or other relevant IEEE governing document has occurred. It is assumed throughout that all parties are IEEE members or are otherwise subject to the IEEE CoE. These examples are presented as educational examples only; no legal or ethical guidance is intended. It is important to remember that the specific facts of a case are important and may change the outcome.

The intended audience is classes studying engineering ethics. Professors may copy and distribute these examples to students for not-for-profit educational purposes only, provided attribution to IEEE/EMCC is made. For any questions about this material, please contact IEEE/EMCC.

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### **Research not in progress:**

[Context:] Dr. Christine is awarded a large research grant by a prestigious national funding agency. This project requires the use of her assigned laboratory in the Department and in particular a large piece of expensive equipment, recently bought by Dr. Christine using other research funds available to her and housed in her laboratory.

[Event:] At this time, the Department Chair Dr. Joan, who never liked Dr. Christine, decides to assert Departmental ownership of that equipment and to place it under control of Dr. Gary, a very senior professor, because Dr. Gary has not obtained any research funding for many years and is otherwise unable to undertake any research.

[Complicating factors:] Dr. Christine warns that her new research project cannot be carried out if the essential equipment is not available as written in the original proposal. Dr. Joan is adamant and will not be dissuaded, on the grounds that Dr. Gary needs long-term assistance, and this is as good a way as any other of providing that assistance, and states that she is unconcerned at the shorter-term effects on Dr. Christine's research project.

[Questions:] (1) Did anyone behave unethically, and if so, who and why? (2) What recourse do the others have?

[Commentary:] Dr. Joan is entitled, in most institutions, to reassign equipment because that equipment belongs to the institution, not to any individual; authority to make such determinations is generally assigned to the Department Chair.

It may be that Dr. Christine could have a case under IEEE CoE Articles 7 and/or 8, "to treat all persons fairly and with respect...; to not engage in harassment of any kind...".

In practice, Dr. Christine may find that an approach to Dr. Joan's supervisor (e.g., the College Dean) to discuss this matter may be more advisable and may bring a more speedy resolution.

**Career advancement?**

[Context:] Dr. Rachel is a professor at Immense State University. She applies for, is offered, and accepts a new and more senior position at Little State University.

[Event:] After working at Little State University for a couple of years, she finds out that before she had left Immense State University someone at Little State University had made enquiries to the Promotion and Tenure Committee at Immense State University, and that the contact on the Promotion and Tenure Committee had relayed confidential personnel information to Little State University.

[Complicating factors:] The administrators at Little State University now take negative action against Dr. Rachel as a result of that information.

[Questions:] (1) Who behaved unethically, and if so, who and in what way? (2) What recourse does Dr. Rachel have?

[Commentary:] The member of the Promotion and Tenure Committee at Immense State University divulging confidential information acted unethically. The Little State University employee making enquiries may also have acted unethically depending upon how the enquiry was made and worded. Dr. Rachel may have an ethics case against these persons at both Universities, under CoE Articles 1, 7 and/or 9, “to protect the privacy of others...to treat all persons fairly and with respect...to avoid injuring others, their property, reputation, or employment by false or malicious actions...”. However, her cases may be limited by application of the statute of limitations stated in the EMCC Operations manual.

**Rude or unethical?**

[Context:] Dr. Andrew and Dr. Brian were faculty members in the same Department until Dr. Andrew retired about a year ago.

[Event:] Dr. Andrew sends Dr. Brian an e-mail message that is rude and offensive, calls into question Dr. Brian’s professionalism, repeats unfounded allegations previously made verbally, and sends a copy to Dr. Brian’s former Dean.

[Question:] Was Dr. Andrew merely rude or was he unethical?

[Commentary:] Dr. Andrew stopped merely being rude and became unethical when another person was copied. Dr. Brian has a clear ethics case against Dr. Andrew that may be brought to EMCC under IEEE CoE Article 9, “to avoid injuring others, their property, reputation, or employment by false or malicious actions, rumors, or any other verbal or physical abuses”.

**Quality control or quality out of control?**

[Context:] Part of Christopher's job is final inspection, immediately prior to shipping, of all the Tergic Blips made by Exalted Electrical Engineering Pvt. Ltd. Christopher has been given wide latitude regarding what should be inspected as this is a "back stop", to catch any obvious manufacturing defects that should have been caught earlier in the inspection process, to make absolutely sure that customers find no cause for complaint with Exalted Electrical Engineering's products. [Event:] One day Christopher finds that the electrical insulation on all the Tergic Blips he tests that day is faulty and might be dangerous under some conditions. He makes some enquiries of the production staff and finds that Shoddy Materials Inc. was contracted to supply the insulation the previous month, and that all their parts have performed badly under this test. As a result, all the Tergic Blips previously sent out with insulation from Shoddy Materials may be potentially faulty. He reports the facts to his supervisor Dusty, the Senior Production Manager of Exalted Electrical Engineering, who tells him that Shoddy Materials was contracted because their insulation was much cheaper than that from their previous supplier, and it was cheaper because it was known to be not as good as what was used previously, but it is good enough for Tergic Blips. [Complicating factors:] The manufacturing specification followed by the Production Department at Exalted Engineering has just been adjusted and approved accordingly by Dusty to allow the use of insulation supplied by Shoddy Materials. Dusty advises Christopher to accept that the reduced performance of the current Tergic Blips is actually adequate and safe under all likely conditions, as otherwise Christopher's employment might be terminated. Christopher concedes that the performance meets the revised specification, but still feels that it is potentially dangerous.

[Questions:] (1) Did anyone behave unethically, and if so, who? (2) What are the clear responsibilities of the respective parties? (3) What recourse, if any, does Christopher have?

[Commentary:] Christopher is now in a difficult position as he has a duty under IEEE CoE Article 1 "to hold paramount, the safety, health, and welfare of the public, to strive to comply with ethical design and sustainable development practices...and to disclose promptly factors that might endanger the public or the environment", but it is also possible that Dusty is correct, that the reduced performance is perfectly adequate and does not endanger the public so that she was justified in revising the manufacturing specification (assuming she has such authority within the company). Although Dusty's threat of terminating Christopher's employment did not help her case, this could result in a protracted legal battle that goes beyond ethical considerations into technical questions of the adequacy of insulation, and if so is unlikely to be resolved by EMCC. Christopher may also wish to examine any relevant "whistle-blower" policies or laws and consult legal counsel for advice.

**Conference capers – and follow the money:**

[Context:] Ivor is Chair of next year's IEEE Conference on Oscilloscopes, Microelectronics, Instruments, and Computers (IEEE-COMIC) and Dr. Jack is a member of the Technical Program Committee for IEEE-COMIC. The current year's IEEE-COMIC is short of Session Chairs and Judges for the student competition.

[Event:] The current year's IEEE-COMIC Conference Chair, Kevin, reaches out to Ivor requesting assistance, and Ivor sends all the names and contact details of next year's Technical Program Committee with the specific comment that all are willing to assist, even though none of those Committee members has in fact been asked about this additional commitment.

Later, following the end of current year's IEEE-COMIC, and after several requests have gone unanswered, only after a year has gone by does Kevin send to the IEEE Section Treasurer the required receipts and other financial records needed for closing the IEEE-COMIC accounts. No explanation for the delay is offered, and so the Section Treasurer telephones Kevin to find the cause of the delay and to prevent a recurrence. Soon after, Kevin complains that the Section Treasurer behaved unprofessionally towards him in that call.

At next year's IEEE-COMIC, Ivor uses his initiative to organize a cheese and wine networking and social gathering event. Ivor pre-orders more than 1½ bottles of wine per attendee. Unfortunately, he forgets to notify the IEEE Section Treasurer of this event so it is not built into the financial plan for IEEE-COMIC. As a result, the Section Treasurer refuses to reimburse Ivor, who brings a case of unethical conduct against the Treasurer.

[Questions:] (1) Did anyone behave unethically? In what way? (2) Who didn't behave unethically? Why not? (3) What recourse is there?

[Commentary:] (a) Dr. Jack may believe that Ivor failed "to treat all persons fairly and with respect..." under CoE Article 7, when Ivor volunteered Dr. Jack for additional work without his permission. In practice, this may be considered an ethical violation that is too small to merit any action from EMCC other than attempting to bring the parties together to effect a mutual resolution. However, sharing contact information of other IEEE members and volunteers without their consent for purposes other than those for which it was provided may be a violation of the IEEE Data Access and Use Policy. This matter should be brought to the attention of the IEEE Data Governance team for their review.

While Kevin's repeated failure to respond to requests for documentation (without even responding with an acknowledgement, holding message, or explanation) is annoying, without further details this may not count as being unethical. However, this conduct may be in violation of IEEE's policies on conference operations. It should be brought to the attention of the IEEE Technical Activities staff for assistance and possible intervention.

Kevin could certainly bring a case against the IEEE Section Treasurer regarding the phone call. While the motivation for the call was reasonable in the circumstances, use of unprofessional language may be unethical.

Finally, Ivor's ordering as much as 1½ bottles of wine per attendee should be brought to the IEEE Technical Activities staff for input on conference spending and reimbursements.

**Committee rules...:**

[Context:] Dr. Thelma, a member of the IEEE's Minutiae Board, is nominated anonymously to receive the IEEE's prestigious Award for Protracted Complacency.

[Event:] Prof. Louise, another member of the Minutiae Board, thinks that Dr. Thelma does not deserve such an important award and so accuses Dr. Thelma of unscrupulously promoting herself and the Award by contacting Minutiae Board's Awards Committee and other members and campaigning to receive the Award before the decision is made by the Awards Committee.

[Complicating factors:] Dr. Thelma hears of these accusations and moves to clear her name by contacting EMCC with copies of the allegations. She also considers obtaining denials from Awards Committee members that they had been contacted by her.

[Question:] What role could EMCC play in this case?

[Commentary:] The role of EMCC, and EMCC's Conduct Review Committee (CRC), is to determine if Cause exists. EMCC and CRC may consider whether Cause does exist in this case; however, additional information and review will be necessary prior to this determination. EMCC could refer this matter back to the relevant IEEE committee (the Minutiae Board). Or, EMCC/CRC could review the case itself to determine if either party acted unethically. If the alleged contact between Dr. Thelma and the Minutiae Board did not take place, then Prof. Louise is clearly in violation of IEEE CoE Article 9, "to avoid injuring others, [or] their...reputation...by false or malicious actions, rumors, or any other verbal or physical abuses". EMCC does not have power to remove an IEEE member such as Prof. Louise from a particular committee, but if Cause is found to exist then EMCC could recommend to the IEEE Board of Directors that Prof. Louise's IEEE membership be suspended or revoked. The term of these sanctions would be determined by a hearing board subject to approval by the IEEE Board of Directors, according to IEEE Policy 7.10, Section O.4. If upheld, this would probably have the same effect if Minutiae Board members are required to be IEEE members in good standing.

### **Publish and be...?**

[Context:] Prof. Edwin is the Editor-in-Chief of the peer-reviewed IEEE Journal of Unbelievable Engineering Research.

[Event:] Prof. Edwin severely restricts what the journal will accept for publication in the area of Spurrative Dialoscopes by declaring certain submitted manuscripts out of scope, overriding the recommendations of the journal's Editorial Board in this specific area.

[Complicating factors:] Although Edwin receives approval from the sponsoring professional society's Publications Committee, none of the Advisory Committee, the Technical Advisory Board, or the Publications Board is informed of the unilateral change of scope. As a result, the Editorial Board reports Edwin's action to IEEE.

[Context:] Dr. Angelina, a young researcher having only a small research output so far, proposes that the IEEE Journal of Unbelievable Engineering Research should publish a special issue on Peripheral Grammeters, a topic borderline to engineering. Prof. Edwin accepts this proposal, and, after reviews managed by Dr. Angelina, 15 original research manuscripts are accepted for publication in the special issue subject to minor revisions.

[Event:] However, Dr. Angelina alters the anonymous reviewer recommendations for *all* the submissions to require citation of published papers by Dr. Angelina herself, even though her papers are irrelevant to, and indeed shed little light on, the topics of the manuscripts. During final editing, Dr. Angelina also adds her name as a co-author to seven of the accepted manuscripts.

[Complicating factors:] As a result of Dr. Angelina's apparent professional distinction (publishing seven papers in a special issue and being a highly-cited author in eight more papers) she is elevated to IEEE Fellow status. Some of the other authors complain to Prof. Edwin that Dr. Angelina's name appears as co-author on their papers without their knowledge or approval, and other authors complain that they were required to add meaningless citations to Dr. Angelina's work. Prof. Edwin investigates and reports the case to EMCC.

[Question:] What role could EMCC play?

[Commentary:] Both Prof. Edwin and Dr. Angelina are alleged to have engaged in serious publications misconduct. EMCC would refer these matters to the IEEE Publication Services and Products Board (IEEE/PSPB) for review.

Clearly Prof. Edwin was unwise not to accept the advice of the journal's Editorial Board, but whether this amounts to unethical conduct is debatable. Edwin's defense could be that he has been entrusted with that post to make professional decisions based upon the best of his experience and judgement, and there is no point having an Editor if the Editor must always follow what the Editorial Board says. Edwin would also cite support from the Publications Committee. By contrast, Dr. Angelina was clearly unethical, contrary to IEEE CoE Articles 5, 7, 9: "to be honest...and to credit properly the contributions of others...to treat all persons fairly and with respect...to avoid injuring others...by false or malicious actions...". If the articles in question have already been published, Prof. Edwin could seek to issue corrections in the Journal as appropriate. If either party's conduct is found to be unethical, appropriate sanctions can be recommended to the IEEE Board of Directors.

**Professional license:**

[Context:] Robert is a licensed Professional Engineer in the State of Arcadia. In that State, only licensed Professional Engineers are allowed to sign off (i.e., to certify conformation with all the applicable installation codes and regulations) the plans, designs, and specifications for the permanent electrical installations (including distribution panels, wiring, sockets, safety protection devices) planned in newly constructed or renovated buildings. In that State, this step is required before the local government authority will consider approval of the proposed construction or renovation. Robert's professional education and work experience is in electrical engineering with an emphasis in the field of power systems. His long-standing friend Elizabeth wants to start a business that will launder hotel items such as towels and bed linens. Elizabeth is *not* a licensed Professional Engineer but designs the electrical layout for the washers and dryers in her future business premises.

[Event:] Elizabeth asks Robert to sign off and seal her design drawings so that they can be submitted to the local building authority for construction approval.

[Question:] What steps must Robert take to comply with the IEEE Code of Ethics, considering the requirements of his professional license?

[Commentary:]

To comply with the IEEE Code of Ethics and his licensing terms, Robert must check every aspect of the design as if Robert had originated it himself. The work required may be less, but probably not by much, than if Robert had originated the design. Robert is signing specifically to say that in his opinion the design is safe and meets all applicable construction codes, and if that turns out not to be the case it is not a defense to say that he did not feel he had to check certain aspects as it wasn't his design, or that he did not originate the design so he cannot be held responsible. Typically, construction requirements for commercial or industrial premises are more stringent than for residential premises, and Elizabeth may not have realized that.

However, if Elizabeth were hoping for a "summary" approval or curtailed examination on the basis of their prior friendship, Robert should politely decline, and perhaps even point out a Conflict of Interest (IEEE CoE Article 3) if he values their friendship and feels it is threatened. Robert should particularly bear in mind IEEE CoE Article 1, "to hold paramount, the safety, health, and welfare of the public, to strive to comply with ethical design...practices, ...and to disclose promptly factors that might endanger the public or the environment" and Article 6, "to undertake technological tasks for others only if qualified by training or experience, or after full disclosure of pertinent limitations".

**Confidentiality:**

[Context:] Harriet, a design engineer, attends an IEEE workshop that includes a plant tour of Tremendous Gear, Inc., a company noted for its innovative equipment design.

[Event:] While on this tour, she happens to pass an unoccupied desk and sees a detailed schematic drawing of a new product that Tremendous Gear is about to manufacture and market. She is impressed with the innovative nature of the design. Upon returning to her own company, she thinks about duplicating the design and presenting the idea to her manager as a product that her company could manufacture and market.

[Question:] What should Harriet do? Why?

[Commentary:] Tremendous Gear, Inc. should have taken better precautions to prevent accidental disclosure of confidential material to third parties. However, such regrettable errors or omissions would not necessarily excuse Harriet's conduct and duty to act ethically. Apart from probably making herself and her own company the subject of litigation, if Harriet copies the Tremendous Gear design and presents it to her manager as her own work, she is likely to be in violation of Article 5 of the IEEE CoE, "to credit properly the contributions of others". If it is truly innovative and is marketed in competition, sooner or later it will be clear to Tremendous Gear that their design has been copied, and Tremendous Gear might then take action for patent or copyright infringement against Harriet's company.

If this were to rise to the level of a complaint to EMCC, it is likely that litigation is also under way, given the potential intellectual property infringement. Pending litigation would result in EMCC not proceeding with the case.



**License violation?**

[Context:] Bildert, a Computer Engineer employed by Adams Scott Engineering, accesses the new copyrighted design software KOSA (imported from Lebonia) that the company has installed on its server.

[Event:] Bildert asks his supervisor if the company has purchased a license to use the KOSA software. His supervisor doesn't know the answer, so Bildert asks more senior managers. No one he asks can confirm that the company purchased a KOSA license but the senior managers tell Bildert to "go ahead and use KOSA" and don't seem concerned enough to want to buy the KOSA software license.

[Questions:] What should Bildert do? Why?

[Commentary:] Rather than, or as well as, asking managers more senior than his own supervisor, Bildert could ask the IT Department to find who loaded KOSA and where the copy originated. However, if the answer is still the same, Bildert is in a difficult position. If he refuses to use KOSA, this action may impact his work at Adams Scott Engineering. If he uses KOSA and it turns out that Adams Scott Engineering did not hold a license to use it, that might be seen as unethical as because of all his questioning he clearly suspects that KOSA may not be legally installed; CoE Article 4 states that he should "avoid unlawful conduct in professional activities". Bildert should conduct a reasonable inquiry into whether a KOSA license is held by his employer.

EMCC would probably not take any action; if Bildert were to use KOSA he would obviously not report himself for an ethical violation, whereas if Bildert refused to use KOSA and filed a complaint with EMCC, EMCC could not reasonably attempt to decide the terms of Adams Scott Engineering's license (or absence thereof) to use KOSA software.

**Professor drones on and on...:**

[Context:] In 2018, Pierre Standalone (an IEEE Senior Member), Associate Professor of Electrical Engineering at the University of Western East Dakota, decides to offer a two-course special topics sequence for senior-year students that requires the design of an in-flight recharging system for a drone. Four students, Peter (an IEEE Student Member), Pyotr (from Russia), Pietro (from Italy), and Petya (an IEEE Student Member from India) enroll in the sequence. During the design phase, Pyotr and Petya come across a technical report from Drohnen-Aufladen GmbH (a German company) that provides detailed information on an in-flight recharging system for a drone.

[Event:] Without disclosing their source, Pyotr and Petya present their design team with a “rough draft” of a design solution for their assigned project. Over the course of their senior year, the team uses that information to develop a working prototype. At the end of the year, Professor Standalone is so impressed that he suggests that all the students publish a scientific paper on their work.

[Complicating factors:] A manuscript is written, submitted to the IEEE Journal of Drone Recharging, accepted for publication, and published. At no time does the team acknowledge the original source of their design solution. The authors of the original technical report at Drohnen-Aufladen GmbH file an ethics complaint with EMCC against Prof. Standalone, Peter, Pyotr, Pietro and Petya.

[Question:] Who is acting unethically?

[Commentary:] As a plagiarism issue, EMCC would refer this matter to IEEE’s Publication Services and Products Board (PSPB) for investigation. Clearly Pyotr and Petya knowingly plagiarized the technical report from Drohnen-Aufladen GmbH. Petya (at least) as a Student Member of IEEE has already agreed to honor CoE Article 5, “to credit properly the contributions of others”. Whether Peter, Pietro, and Prof. Standalone have acted unethically depends upon how diligently they checked on the previous work published in this field. If the technical report from Drohnen-Aufladen GmbH is very obscure and not readily available (and Pyotr and Petya only came across it by an unlikely chance, perhaps by internet-surfing an unrelated topic), then Peter’s, Pietro’s, and Prof. Standalone’s original belief that the plagiarized work was original may not rise to the level of unethical conduct if they had made reasonable (even if not exhaustive) efforts to check the originality of the other students. However, if Drohnen-Aufladen GmbH’s report is widely available, linked on the internet, well-publicized, and frequently cited by other researchers, absence of due diligence in checking Pyotr and Petya’s work could amount to unethical conduct by Peter, Pietro, and Prof. Standalone. An additional probable outcome is that the paper is either withdrawn or additional references are added later by the Journal editors, depending upon the degree of commonality between the two reports.

**Damage control:**

[Context:] Electrical Design Engineer John is tasked with designing a 110kV to 765kV step-up transformer for a unique US customer application. His new boss, Juan, recently transferred to the USA from the corporation's plant in Madrid, Spain. John is careful to make detailed inquiries to his customer regarding the environment in which this special transformer will operate and is also careful to ask about the type of transportation to be used so that his design will not be damaged in transit. He is told that the transportation will be accomplished via a specially-designed truck over the U.S. interstate highway system.

[Event:] Two weeks after John met with the customer, the customer contacts Juan with the news that the transformer will, instead, be transported via a rail carrier. Unfortunately, Juan does not communicate that information to John.

[Complicating factors:] After the design is completed and the transformer is transported to its destination site by rail, the site inspection of the transformer finds that the transformer has serious internal damage which requires its return to the manufacturing site, disassembly, repair, reassembly, and transportation back to the destination. The customer refuses to pay any part of the additional incurred cost, and Juan blames John for a poor design. Later, John finds out that Juan did not pass along to him vital transportation information, and files an EMCC complaint against Juan. In response, Juan terminates John's employment for poor design of the transformer.

[Question:] What should EMCC do?

[Commentary:] While it is unfortunate that Juan did not keep John fully apprised of developments it is not unethical, as it does not materially violate any of the CoE Articles. This is a private matter because it is the result of an internal management decision and not a violation of some ethical principle, and so EMCC would dismiss the complaint. Additionally, civil litigation may arise from both the termination and invoicing issues presented, and if so this is a further reason why EMCC would take no action.

If Juan terminated John's employment (partially) in retribution for filing an EMCC complaint, that is a clear violation of IEEE CoE Article 10, "to not retaliate against individuals reporting a violation.").

**Abuse of authority?**

[Context:] Dr. Alex is the Head of the Department of Computer Electronics at the University of Abandoned Hope.

[Event:] As Department Head, Dr. Alex insists that he should be listed as an author on every paper and proposal submitted by anyone in his Department, even if he made no direct technical contribution, because at the very least Dr. Alex is responsible for managing the infrastructure in the Department (technician support, administrative support, allocation of junior researchers, allocation of Departmental funding and other support) and ensuring that all of its components run smoothly. He also feels this is justified as he does not have time to progress his own personal research agenda, and this is the only way he can elongate his résumé in preparation for his next job application.

[Question:] Is this unethical?

[Commentary:] Whether such an authorship requirement is regarded as unethical can depend upon the location and culture of the workplace. In some cultures, this type of authorship requirement (dependent upon position rather than technical input) is regarded as normal and expected, although perhaps old-fashioned. In others (for example, in the U.S.A. and some parts of Europe) it is regarded now as absolutely unethical. (If any such papers were submitted to IEEE journals, authorship issues should be referred to IEEE's Publication Services and Products Board (PSPB) for investigation; authorship of proposals should be referred to the funding agency concerned.) In some cultures, authorship mandates such as those described were more acceptable in the past. Some research journals now require submissions to include a statement of which authors contributed what work to the final publication. This case is a good illustration of how ethics questions can be interpreted and adjudicated differently in different cultures, and how any ethical system must be adaptable to the prevailing culture and mores of the time and place where an alleged infringement took place.

**A question of standards:**

[Context:] Software Engineer Bohai works for a software company that designs software for operating a public facility. Bohai is aware that the draft of new operational standards is about to be released and is concerned that his company's current software design will not meet the new operational standards.

[Event:] Bohai recommends that more software tests be conducted before releasing the software. His boss, Dr. Doolittle, rejects Bohai's advice because their client is eager to have the software installed and a delay will be extremely costly both to the software company and to the client.

[Complicating factors:] The original software is installed and then later it is indeed found not to comply with the new operational standards. The result is extremely costly to the customer. The customer files an EMCC complaint against Bohai, Dr. Doolittle, and their company.

[Question:] Is the complaint justified?

[Commentary:] This is a private matter because it is the result of an internal management decision and not a violation of some ethical principle, and so EMCC would dismiss the complaint. Additionally, civil litigation may arise from the additional costs incurred by the customer, and if so this is a further reason why EMCC would take no action.

IEEE CoE Article 1 requires IEEE members "to hold paramount the safety, health, and welfare of the public,...and to disclose promptly factors that might endanger the public or the environment." However, assuming the software correctly complies with the old standard, the question is whether it poses a threat if it is still used. It is more likely that Bohai and Dr. Doolittle provided out of date material that was not necessarily dangerous. Just selling an inferior product is not an ethical issue; it is more likely to be a contractual issue if the specifications call for compliance with up-to-date standards.

**Conflict of interest?**

[Context:] Lisa is a consulting electrical engineer who is competent to prepare specifications for IEEE 802.11-compliant systems for media access control and physical layer protocols for wireless LANs. Lisa also owns a small company (We WiFi U, Inc.) that manufactures and installs systems compliant with IEEE 802.11.

[Event:] The Omni-Supply Corporation hires Lisa as an independent consultant to prepare specifications for a system that will be installed in their new 100,000 square-foot distribution center. Once the design specifications are completed and provided to the Omni-Supply Corporation, Omni-Supply requests bids for installation of the IEEE 801.11 system. And...the winning low bidder is We WiFi U, Inc. After the new Omni-Supply distribution center is operational, a newspaper article mentions that Lisa owns We WiFi U. The Omni-Supply Corporation becomes concerned and files a complaint to EMCC against Lisa.

[Question:] Is this complaint justified?

[Commentary:] A definite conflict of interest exists because Lisa wrote the specifications and also simultaneously owned a company likely to bid for contracts related to these specifications, and so the specifications may have been (or perceived to have been) especially slanted towards favoring technology with which Lisa's company was most comfortable. IEEE CoE Article 3 states clearly that IEEE Members must "avoid real or perceived conflicts of interest whenever possible, and to disclose them to affected parties when they do exist". Lisa should have disclosed her conflict of interest prior to submitting the bid to Omni-Supply, and the bid from We WiFi U should have indicated the clear connection between its ownership and the person who drew up the specifications. Unless she indicated her conflict on both occasions, an ethics complaint may be justified and she may also be subject to potential civil litigation from Omni-Supply as the financial implications are so high. If litigation goes ahead, it may limit EMCC's ability to act.

**Foreign exchange?**

[Context:] Paulo is an electronics engineer who works in business development for a technology company. His role is international market development in the region. He is following up a significant business opportunity related to a foreign government's purchasing in a key market.

[Event:] During negotiations, the decision-maker for the government purchasing division mentions that she has a daughter who would like to go to a prestigious university in Paulo's country. Paulo knows that the purchasing government is considering a bid from another company, and that meeting the expenses for the government official's daughter to attend university could be critical in winning the business.

[Complicating factors:] While Paulo's government has recently passed a law against bribery of foreign officials, it is rarely enforced. Paulo believes that his manager wants him to do anything required to win the business.

[Questions:] Which section(s) of the IEEE Code of Ethics are relevant to Paulo? How should Paulo approach each of the complicating factors? What are his ethical options?

[Commentary:] IEEE CoE Article 4, "to avoid unlawful conduct in professional activities, and to reject bribery in all its forms" is relevant to Paulo's situation. Clearly Paulo cannot ignore his government's new law against bribery of foreign officials, and the CoE specifically requires rejecting any use of bribery. Depending upon how insistent Paulo's manager is, Paulo may be in a difficult position if he is instructed to ignore the law and violate the IEEE CoE.