Understanding best practice evaluation is paramount to the problem of determining best practice science communication; however, the problem is fundamentally one of determining which features of science communication might be usefully considered. Such features are often discussed by researchers and practitioners within debates about models of science communication. In particular, many researchers and practitioners debate the appropriateness of a model of "engagement" or participation for describing and evaluating science communication activities. While some have suggested that science communication models have evolved, others contest that progressive models are merely reincarnations of old ones—particularly in practice. Nonetheless, a sense remains in science communication circles that science communication activities modelled by notions of deficit and dialogue are less desirable than ones modelled by engagement.

It is our understanding of modelling, and its resulting influence on evaluation practice, that is central to what I’d like to discuss here. I will argue that it is our misapplication of these models of science communication that is hindering the development of effective evaluation practices, and that a new view, or perspective, of the features that make up these models is needed.

**Transmission view of science communication**

One way of modelling communication is to take a linear, or transmission view of communication in which an idea originates with a sender, who sends it via some medium to a receiver, and the receiver does something with that message. A common metaphor used to describe this view is one of transportation; during the 19th century, the word “communication” referred to the physical transportation of messages (usually in the form of letters or telegrams) in the same way that one might refer to the transportation of goods or people (Carey 1989).

It seems that for some time now—at least since notions of scientific literacy and public understanding of science were ascribed to communication deficits—a linear view of communication has served as a useful way of describing and prescribing the processes of science communication. To date, science communicators continue to plan and assess their efforts according to various elements of a transmission view of communication.

A transmission view of communication has some obvious advantages: it is relatively simple to understand, can be generalised to different kinds of communication, and
its results are easy to quantify. The focus is on disseminating knowledge and ideas, which makes it relatively easy to evaluate—“good” science communication in this view refers to effective message transfer (e.g., Was the message received in the way that it was intended, and did the receiver do what was expected as a result?). For science communication, the expected outcomes as a result of message transmission have been regarded as a change in knowledge, understanding, attitudes or behaviour.

However, a transmission view has proven to be both ineffective and insufficient for planning and describing our latest conceptions of science communication. As a result, there has been a movement in science communication to shift away from viewing communication as the transmission of information, to a notion of communication as “engagement”. And engagement much more resembles what communication theorist James Carey described as a ritual view of communication.

**Ritual view of science communication**

Another way of modelling communication is to take a ritual view. In Carey’s ritual view of communication, the focus is not on imparting information (as it is in the transmission view), but on shared understanding of meanings in a cultural context. Rather than concentrating on whether or not the message is received, a ritual view is concerned with elements such as when and where the act of communication takes place, the roles of (and power relations between) the people involved, and the intended purpose of the communication. Essentially, a ritual view offers a way of describing this new standard of science communication that is aspired to – communication as the “representation of shared beliefs” defined in terms of “sharing”, “participation”, “association”, and “fellowship” (Carey 1989). The question for science communication now becomes: what does this new phase of evaluation look like?

It is apparent that retrofitting old evaluation techniques, which are suited to transmission views, into this new form of science communication is insufficient. For example, demonstrating an improvement in the publics’ knowledge, understanding, or attitudes about science is more reflective of our ability to persuade than it is of their engagement experience. And it makes sense that current evaluations models are not working because the transmission view is a characteristically different view with what might be considered characteristically different “units”. To understand the benefits of engagement, a new mode of evaluation—to fit our new model of communication—is desperately needed.

I suggest that instead of emphasising the old units of “knowledge, understanding, attitudes or behaviour”, the way forward lies in featuring values in the evaluation process. In evaluating science communication, the fact that values are an inextricable part of evaluation has largely been ignored. A values perspective allows for a broader perspective, provides a more genuine descriptive (rather than prescriptive) account, and encourages a progression from linear models of science communication to more multidirectional models.
Advantages to a values perspective

Allows for a broader perspective of the evaluation process: In normative, transmission modes of science communication evaluation, the focus is on the evaluation itself as a product. Essentially, evaluation is represented by all the activities that go into it (e.g., gathering and analysing data), and the production of a report or document based on measured objectives, indicators, etc. However, there are a wide variety of other features of evaluation that tend to remain invisible, or separate from the broader picture of science communication evaluation.

In a ritual or value-focused evaluation framework, it is necessary not only to look at the values in the product of evaluation, but also the values in all the other inputs that shape how the evaluation is produced. In other words, the values that shape an evaluation are not “contained” within the evaluation itself—they come from stakeholder documents (e.g., policy and funding documents, evaluation guides, research publications) and sources of data (e.g., emails, interviews, focus groups, informal conversations, questionnaires/surveys, observations). Therefore, an examination of the values in an evaluation document must also examine the values that framed how the evaluation came into being. This provides a much more diverse and richer collection of data for understanding the bigger picture in evaluation of engagement than the reporting of objectives, indicators, etc.

Allows for a reflection on how things are, not how they should be: In a normative, transmission mode of science communication evaluation, there is a tendency to regard “value judgements” (e.g., speculative statements) as subjective and therefore inadmissible. It is easy criticise these judgements and argue that the person who wrote them does not have sufficient evidence or that their justifications are invalid, and that the key to improving evaluation is to provide more training, knowledge, or understanding of evaluation.

In contrast, in a value-focused mode of evaluation we can take a broader view of how people are valuing activities and look at that same judgement in light of the other inputs in the evaluation process. Each of the inputs reflects decisions made by a person (or people) about what “things of value” to include and exclude and how to support and frame their arguments. For example, evaluators may explicitly or implicitly make decisions about data to collect and make statements of value based on what they think funders or participants value. With a values perspective, we can look at them and discuss how the evaluator, or the person writing the report, appears to be assuming values on behalf of other people. And that assumed value is guiding how the evaluation is carried out. In other words, instead of closing the dialogue about what is happening in evaluation by saying that it is incorrect, we can reflect on the processes and try to understand the evaluative influences at work.

Thus, instead of looking to improve evaluation by providing some remedy for insights that can be supported with formal, objective evidence, it is more important to recognise that evaluation happens around values. Values can be expressed explicitly,
but they are also assumed, imputed, and justified in particular ways. However, values cannot be eliminated in evaluation—even wanting to minimise them, by endorsing objectiveness, is a reflection of values.

Fitting for progression from linearity: The tendency for evaluation to appear linear makes it appealing to try and describe the flow of how values should happen in discourse. For example, one could argue that the “push” side of the information flow (e.g., advice from governments, policymakers, funders, and researchers) feeds into how evaluators collect information from the “pull” side (e.g., parents, children, participants, etc.).

However, in practice, it is less clear where the values used by the evaluators come from. For example, evaluators may draw on funders’ values as equally and prevalently as they may draw on participant values, and ultimately put them forward as their own values.

As the ritual model predicts, values are everywhere. Evaluators and researchers are struggling with them because they do not recognise them as values. A values perspective encourages us to see that our attempts to model evaluation in a linear fashion are failing; just as we tried to make science communication modelled in a linear fashion and decided to move on, now we have to do the same thing for evaluation.

Conclusion

In summary, a “values” perspective not only fundamentally changes how you examine evaluation, such a view is necessary if science communication is going to move on from linear models of communication where there tends to be a desire to eliminate values. The field needs to acknowledge that values cannot be eliminated—because evaluation is about demonstrating the way people value.

I suggest that if science communication is to move into an engagement paradigm, or model of science communication, a shift in thinking is required. Successful science communication can no longer be judged by its adherence to a transmission model of practice, but must move on to a ritual model of both science communication and its evaluation. Best practice evaluation, therefore, should not attempt to eliminate values, but embrace them, make them transparent, and make use of them.

References