

Preliminary considerations

On the face of it, the connection between the statistical-engineering and politico-cultural approaches to communication seems weak, although the conceptual problem of modeling communication remains the same; many of the key terms of reference, such as encoding and decoding, are also generally applicable. The first lecture below will prove this wrong. If one prefers a historical approach, in communication theory one must at some point return avoiding the search for absolute origins to the famous Shannon and Weaver model. Not everyone agrees with this statement, however. Take, for example, Paul Cobleys otherwise excellent *The Communication Theory Reader* ((Paul Cobley, *The Communication Theory Reader*, London: Routledge, 1999.)) in which no mention is made of Shannon and Weaver or cybernetic research. Rather, Cobley takes key texts in structuralism and post-structuralism as his main axis, beginning with C. S. Peirce and Ferdinand de Saussure and moving forward in search of the theoretical lives of signs in linguistic and literary traditions. Cobleys point of entry is determined not by variations on the dominant model, but by the thematic emphasis on signification. This is less an issue of privileging scientific foundations or giving to communication some scientific pretensions that survive today in some corners of semiotics, than an indication of the importance of the period at issue for my work: the 1940s. In these lectures the mathematical model of communication serves as reserve of concepts and problems that recur in various ways as the model is adapted to different sorts of messages (literary, media), ideological problematics (hegemonic processes and oppositional practices) and theoretical concerns (advanced semiotic modeling).

Modern communication theory is, in many ways, a war baby. Most readers of the work of the father of cybernetics, Norbert Wiener ((Norbert Wiener, *Cybernetics or control and communication in the animal and the machine*, Cambridge: MIT Press, 1962. He describes his work with Bigelow at pp. 5-6, and notes the influence of Shannon at p. 10. For more on the military origins of technologies from the Bell Labs and elsewhere, see Friedrich Kittler, *Unconditional Surrender, in Materialities of Communication*, Hans Ulrich Gumbrecht and K. Ludwig Pfeiffer (eds.), Stanford: Stanford University Press, 1994.)), acknowledge that his papers from the late 1940s were marked by his wartime work as much as by the influence of the research of Claude E. Shannon and Warren Weaver ((Claude E. Shannon and Warren Weaver, *The Mathematical Theory of Communication*, Urbana: University of Illinois Press, 1964. Weavers remarks concerning Wiener are at page 3, note 1. All references in the body of the lecture are to this volume.)). Wiener is clear on this point; but Shannon returns the compliment. It was work on a war project with Julian Bigelow that pushed the theory of prediction in the direction of the integration of feedback, for the question upon which Wiener and Bigelow were working was posed by nothing less than anti-aircraft artillery; in other words, a classic question of control and communication between the theory of curvilinear prediction of aircraft position and how the human gunner points his artillery. How does one get feedback into this human-machine system so as to close the gap between the pattern that a motion follows and how it is actually performed? In short, feedback links output to input, and the gap is closed by introducing new input into the system so that the actual performance is brought into a closer relation with the pattern. Wiener ((Norbert Wiener, *Cybernetics or control and communication in the animal and the machine*, Cambridge: MIT Press, 1962. He describes his work with Bigelow at pp. 5-6, and notes the influence of Shannon at p. 10. For more

on the military origins of technologies from the Bell Labs and elsewhere, see Friedrich Kittler, *Unconditional Surrender*, in *Materialities of Communication*, Hans Ulrich Gumbrecht and K. Ludwig Pfeiffer (eds.), Stanford: Stanford University Press, 1994.)) admits that cybernetics would have been unthinkable without this wartime work. There arose the need for a cyborgology ((Cyborgology. Donna Haraway, *Modest_Witness@Second_Millennium*, London: Routledge, 1997, p. 281, note 2.)), later transferred to the cultural domain, based literally in war and computing; subsequently, there has been a steady stream of warnings about the military origins of the term. If there is a specter haunting cyborgology, it is war. Donna Haraway often reminds her readers of this, even though her figural cyborgs exceeded their origins.

This is somewhat familiar territory for those with an interest in high-tech cultural theory. What is less familiar is that the connection I want to draw between communication theory and cultural studies through war. This is one of two connections that inspired me to investigate models of communication in cultural studies and cultural theory; the other was the commonplace appeal to a version of the model that one finds in many cultural studies and related texts.

Cultural studies is also a war baby. This is not an idle fancy the illusion of which is created through my creative juxtaposition of cybernetics and cultural studies around the communication model. One of many things to be gleaned from a close reading of Fred Ingliss ((Fred Inglis, *Raymond Williams*, London: Verso, 1995. See his chapter *Guards Officer*, pp. 86-106. The standard story is told by Ioan Davies in his *Cultural Studies and Beyond*, London: Routledge, 1995, especially page 54ff.)) intellectual biography of Raymond Williams is the connection between the latter's war service and activities and his cultural interests. However, to couch the relation in terms of Williams's personal interests and concerns is not strong

enough. I am looking at two things. First, there is the biography that is elided in the inherited view of a working class Welsh boy who becomes a peripatetic educator riding the rails and teaching night courses in adult education outside the walls of the university. As a professor of cultural studies I have also done this kind of work, but it should be said that distances between centres in Canada are rather a lot farther and more difficult to traverse, even by rail, especially in winter, than in the England; and, having experienced this life, I am not in the least bit nostalgic for it. This standard view is available just about anywhere in the cultural studies literature that recounts the British Left tradition, but I learned it through the teaching of the late Ioan Davies ((Fred Inglis, Raymond Williams, London: Verso, 1995. See his chapter Guards Officer, pp. 86-106. The standard story is told by Ioan Davies in his Cultural Studies and Beyond, London: Routledge, 1995, especially page 54ff.)) What makes Inglis book so interesting is the chapter in-between the inherited wisdom; what he dubs Guards Officer.

The first virtue of Inglis account is that he situates the activist intellectual, the aristocratic radical, if you will, Edward Thompson, in the same milieu, widening the potential scope of the inquiry; so, then, echoing Davies, one can place Thompson and Williams in extra-mural education, the Communist Party, and the burgeoning magazine/journal/publishing culture of the left and, to go beyond Davies, as fellow officers of the British civilian army in the Second World War. As an aside, one of the things that Williams learned in Cadet School of the Royal Artillery was bracketing how to calculate and call down artillery fire on points in a landscape in the foreground from ones position from guns placed in background positions, a calculable communication problem that could be dealt with geometrically. However, what distinguishes Williams experience in the 21st Anti-Tank Regiment was not so much his experiences of loss and victory which I do not want to diminish but his editorship of the regimental newspaper

Twentyone, whose existence resulted from the capture of a printing press in the spring of 1945. As Inglis describes it, Twentyone was somewhere between the Cambridge University Journal and that much-lamented Labour paper, the Daily Herald. Williams served both as editor and writer, producing many pieces under various pseudonyms. Marked by idealism and innocence, as Inglis puts it, the political views expressed by Williams were a kind of discourse on freedom and an absolute condemnation of fascism ((Antifascism. The Marxist historian E. P. Thompson was also a tank troop commander in, according to his somewhat famous phrase, an ingenious civilian army. As Dennis Dworkin writes in Cultural Marxism in Postwar Britain, Thompsons strongest impressions of his army years were the mens antifascist spirit, their adherence to democratic and often socialist principles, and their resolute anti-imperialism He remembered it as an authentic Popular Front (Durham: Duke University Press, 1997), p. 17.)), especially the German army, though the question of Williams sense of the emerging cold war remains a debatable point. It seems fairly clear that it wasnt the cold war that was on Williams mind. Rather, biography and journalism dovetail with post-war history in the lives of both Williams and Thompson, and this is the juncture at which a certain cultural studies is announced alongside the advent of total peace. The aforementioned reference to the discourse on freedom is already in line with the desire of the Army Bureau of Current Affairs to have the officers discuss [the Beveridge Report] with the chaps. The summer of 1945 saw the landslide victory of Labour, which Williams enthusiastically announced and covered in Twentyone, and the reality of the total peace that would be waged by the welfare state outlined by Sir William Henry Beveridge in his report on security dating from 1942.

As French urbanist Paul Virilio ((Paul Virilio, The Suicidal State, in The Virilio Reader, James Der Derian (ed.), Oxford: Blackwell, 1998, especially pages 32ff.)) underlines, the freedom at stake in the Beveridge report

entailed transcending the freedom from want that Roosevelt counted among his four freedoms in the New Deal of the same period. Virilio writes: That which some enthusiastically call freedom from want is in fact exactly the opposite, since it is now only the state which, in the words of Beveridge, will be qualified to make the diagnosis of want for the well-being of the citizen. This was a system of society, the welfare state, that was already an objective of war, a warfare state or war pursued by others means. To sing the praises of freedom in the context of a crippled capitalist democracy still upholding the unattainable goal of freedom, is to readily embrace a compromise: at least Labour won the election, even if the free individual, as Virilio continues: is no longer properly spoken of as a citizen; he is an anonymous organism in a limited situation, since the law sees to the minimal satisfaction of need.

All of this poses the thorniest problems in political economy, of course, but also in communication and cultural studies: officers like Williams and Thompson explained the new social code of post-war England positioning at least the antifascist spirit of the troops in a way that they would operate inside it, and naturalize socialist spirit; the welfare state gives the gift of the social in the form of medical and other securities. The welfare state appears as the unassailable sender communicating unreturnable messages of survival in the forms of assistance and guarantees; failure to receive would be, as Virilio suggests, death: non-assistance [is] a condemnation to death. Virilio's reading is too inflexible to permit a range of decodings; his position also lacks the sociological nuances that gave rise to the work of the Birmingham tradition of cultural studies.

The engine of British cultural studies was in many ways the welfare state in context (state-control in selected sectors and unionism and the requirements of capitalism) and its receptions; when it was partially dismantled by Thatcherism ((Thatcherism. The key piece of work remain

Stuart Hall's Gramscian-inspired analysis in such statements as *The Toad in the Garden: Thatcherism among the Theorists*, in *Marxism and the Interpretation of Culture*, Lawrence Grossberg and Cary Nelson (eds.), Urbana: University of Illinois Press, 1988, pp. 35-57 and subsequent discussion from pp. 58-73.

Notice needs to be given to the well-known and perhaps worn irony that Thatcherism was built on the ground that Labour governments since the late sixties had worked themselves disciplining the working class, declaring war on the minority fringe, hemming in the largesse of the welfare state. (In Dworkin, p. 256, see note on Antifascism) John Clarke's remarks on Beveridge and the National Health and Insurance Acts are insightful, *Capital and culture: the post-war working class revisited*, in *Working Class Culture*, John Clarke, Chas Critcher and Richard Johnson (eds.), London: Hutchinson and the Centre for Contemporary Cultural Studies, 1979, pp. 238-53. For further specifications of the limits of the postwar capitalist welfare state, boiled down quite nicely to eight points, see *Crime, Law and the State*, in Stuart Hall, Chas Critcher, Tony Jefferson, John Clarke and Brian Roberts, *Policing the Crisis: Mugging, the State, and Law and Order*, London: Macmillan, 1978, pp. 212-13.)), it still remained at the heart of cultural studies, for Stuart Hall and others who made its imaginary their subject. From Beveridge to Thatcher, the welfare state was analyzed through education, youth, crime, racism, gender, media, and all the other critical topics through which decoding practices — collective transformations of existing messages and new representations — could be detected. The most telling analyses of the conjunctural sort that is, all those issues around the negotiation of a consensus given the tendency of hegemony by means of consent to involve a constantly shifting, retrenching, and contested field of relations are those advanced by John Clarke ((Thatcherism. The key pieces of work remain Stuart Hall's Gramscian-inspired analysis in such statements as *The Toad in the Garden: Thatcherism among the Theorists*, in *Marxism and the*

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reproduction was even evident in the kind of housing that was constructed in the postwar years.

These, then, are the two considerations that led me to the topic of the model of communication in cultural studies.

The Mathematical Model of Communication Revisited

The celebrated Shannon and Weaver model of communication was described in two essays dating from 1948 and 49: Warren Weavers Recent Contributions to the Mathematical Theory of Communication and Claude E. Shannons The Mathematical Theory of Communication. Shannons work was undertaken in the laboratories of Bell Telephone and was originally published in the Bell System Technical Journal. These two essays are classics of information and communication theory and, even though it is Norbert Wiener who is mentioned most often in connection with the development of statistical communication theory and cybernetics, Wiener credits Shannon with generating his own interest in the field ; though, elsewhere, ((Norbert Wiener,Cybernetics or control and communication in the animal and the machine, Cambridge: MIT Press, 1962. He describes his work with Bigelow at pp. 5-6, and notes the influence of Shannon at p. 10. For more on the military origins of technologies from the Bell Labs and elsewhere, see Friedrich Kittler, Unconditional Surrender, in Materialities of Communication, Hans Ulrich Gumbrecht and K. Ludwig Pfeiffer (eds.), Stanford: Stanford University Press, 1994.)) is less generous and probably more accurate, noting that the engineering approach to communication based on statistical theory was an idea [that] occurred at about the same time to several writers . Since Shannon has said pretty much the same

thing, it is best to think of this origin in terms of simultaneity and complementarity.

Scholars in the area of information theory with an interest in the work of both Shannon and Wiener separate them on the basis of the two concepts that will play a large role in these lectures: encoding and decoding. Robert Ash ((Robert Ash, *Information Theory*, New York: Interscience Publishers, 1965, p. v; Umberto Eco, *A Theory of Semiotics*, Bloomington: Indiana University Press, 1976, p. 41.)), for instance, writes: The Shannon formulation differs from the Wiener approach in the nature of the transmitted signal and in the type of decision made at the receiver. In the Shannon model, a randomly generated message produced by an information source is encoded, that is, each possible message that the source can produce is associated with a signal belonging to a specified set. It is the encoded message which is actually transmitted. When the output is received, a decoding operation is performed, that is, a decision is made as to the identity of the particular signal transmitted. In the Wiener model a random signal is to be communicated directly through the channel; the encoding step is absent. The decoder in this case operates on the received signal to produce an estimate of some property of the input. In general, the basic objective is to design a decoder which makes the best estimate Of course, there are other significant differences and similarities (how the channel is modeled, for instance, and the scale adopted for addition and multiplication — 2 rather than 10 — which Wiener borrowed from the Bell labs) between the Shannon and Wiener models, but they do not concern me here; it is worth noting, however, that the production of an identity between encoded messages by decoders remains the fundamental problem in communication, no matter if we are considering signal accuracies or the asymmetry between meaning structures at either end of the model. While it may seem a long step from this low threshold of semiotic theory — as Umberto Eco Robert Ash, *Information Theory*, New

York: Interscience Publishers, 1965, p. v; Umberto Eco, *A Theory of Semiotics*, Bloomington: Indiana University Press, 1976, p. 41.)) refers to informational-engineering problems of communication — to Stuart Halls political culture of communication in his famous theoretical statement on Encoding and Decoding, in which many of the theoretical traditions he had assimilated were brought to bear on the problem of decoding, the elementary categories do not change.

Encoding raises questions of selection, translation and transmission; to use the concepts preferred by Eco in his theory, following Shannon, information represents the freedom of choice available in the possible selection of an event and therefore it is first of all a statistical property of the source. Importantly, it is upon this probability that Eco imposes an apparatus of encoding he calls a s-code. Encoding makes information, defined probabilistically, manageable. To put this another way, anyone who has worked in advertising understands the delicacies of encoding pragmatics in which messages are constructed and reconstructed and refined based on feedback from or, as is often the case, guesswork, about the worlds of the intended receivers. In this sense, encoding pragmatics always involve the use of systems of reference transferable and shareable between senders and receivers (in advertising, systems derived from the social and cultural knowledge and collective imaginations of receivers, packaged in a certain way, and sent back to them).

In this lecture I will focus on the problems outlined in Weavers paper with occasional references to Shannon. The reason for this is simple. It is the commentary on general problems rather than the mathematical expression of the model itself that provides the backdrop against which subsequent deployments of it in a variety of cultural domains (poetics, television, commercial communication, etc) may be best appreciated. Weaver approaches communication in a most general way in terms of a broad

statement about minds affecting other minds by means of various procedures; this doesn't seem to lend itself to a Peircean interpretation that asks after the process of semiotic causation at the phenomenistic level (generation of signs by objects, creating another thing that is a further sign of that object, and this second sign being an interpretant of the sign that generated it, etc.), even the minds at issue for Weaver may not only be individual interpreters.

For Weaver, communication poses problems at three levels: technical concerning the accuracy of transmitting a finite set of symbols conceived as an engineering problem (accuracy); semantic a concern with the precise conveyance of meaning, posing the problem of identity between intended and received meaning (philosophical problem); and effectiveness does the received meaning have the desired effect on the decoder, influencing his or her conduct (again, another philosophical issue)? It is to the first level that Weaver directs his attention.

At the level of technical communication, the two terminal model presents an information source from which issues a message to a transmitter that sends a signal through a channel subject to a certain amount of noise; the signal is received by a receiver that delivers the message to its final destination. Ultimately, my interest will fall on the receiver's decoding practices rather than the transmitter's encoding of a signal into a message. Weaver's model presents a host of problems because it doubles the efforts of communication at both terminals of the model. The information source, to begin with, involves the selection of a message out of a set of possible messages (the message may consist of words, pictures, music, etc.). The transmitter changes or translates the message into a signal; the signal is sent through a communication channel from the transmitter to the receiver. On the encoding side, messages are selected, translated, and then transmitted. The process is threefold. The model seems to be telegraphy,

involving the selection of a message consisting of written words and their translation into a series of dots, dashes and spaces; the receiver on the decoding side must share this code and functions, as Weaver puts it, as an inverse transmitter. (7) Sometimes, noise gets into the transmission. It is unwanted and distorting, adding or subtracting from the signal, thereby creating uncertainty about the message. As for the message, the transmitter encodes it from an information source. Despite the technical nature of the representation, the interpersonal drama of the situation is fairly obvious: a message is delivered to an operator who then translates it into code for mechanical transmission, but what comes out the other end is telegraphese, a broken English, if you will, pared down to its essentials. This is a subcode within the encoding operation that Weaver neglects to mention, upon which may be grafted other subcodes, of course, especially in times of war. I will return to the social scene of encoding and decoding momentarily.

The other two levels raise semantic issues and call for the invention, in Weavers estimation, of a semantic receiver that is interposed between the engineering receiver (changing signals back into messages) and the destination (26). There is implicit in this communication a chain of command that will become clear in a moment. The addition of a second decoding has the goal of match[ing] the statistical semantic characteristics of the message to the statistical semantic capacities of the totality of receivers, or of that subset of receivers which constitute the audience one wishes to affect (26). Implied here is the need for audience research or at least sensitivity to small groups of receivers, but in the language of matching statistically the characteristics of messages with the capacities of audiences. The idea of the capacity of the audience is particularly rich (27) and relevant to the lecturer, cyber or otherwise: it works on the analogy of crowding too much information over a channel since, no matter how efficient and clean the encoding, it is still possible to overcrowd the

audiences capacity to receive the message. The audience may be filled up and then spill the remainder of the message; overcrowding the audience will also produce error and confusion. Of course, this is conceived of statistically. Information theoretical models of communication were little concerned with meaning and not at all with individual messages, but with the statistical characteristics of messages. To put it bluntly, information is not meaning: engineering triumphs over semantics. What you could say is more interesting than what you do say because the analysis of informational units called bits, the selection and combination of which is subject to degrees of freedom and constraint, are described by a logarithm (x is the logarithm of y to the base m) beginning with the base $m = 2$; to the power of x or the number of alternatives which tells you the number of bits of information, equals y (if the base is 2 and the alternatives are 16 then there are 4 bits of information). It is not my intent to follow Weaver as he clears the ground for the statistical study of language. It turns out upon closer examination that the social scene of the engineering problem of communication is stratified in various ways, the most obvious of which is gender in a service environment. Weaver writes: An engineering communication theory is just like a very proper and discreet girl accepting your telegram. She pays no attention to the meaning, whether it be sad, or joyous, or embarrassing. But she must be prepared to deal with all that come to her desk. This idea that a communication system ought to try to deal with all possible messages, and that the intelligent way is to base design on the statistical character of the source, is surely not without significance for communication in general. (27) Indeed, Shannon remarked at the outset of his paper that semantics are irrelevant to engineering; the focus is on the selection of a message from a set of possible messages. In terms of Weavers analogy, the telegraph girl should be discreet and show no interest in meaning; her task is translate English or whatever language into telegraphese. The social scene here is a service environment, the telegraph office; but in the military chain of command, orders are issued by

superiors and delivered for execution by inferiors at the telegraph desk. Translation of the message is a gendered activity ((Gendered activity and the valences or limited range of potential uses of technology. See Michele Martin, *Hello Central?: Gender, Technology and Culture in the Formation of the Telephone System*, Montreal: McGill-Queens University Press, 1991.)) that requires compliance, discretion and above all else suspension of prurient interest and moral imperatives. It is almost as if the engineering theory is bogged down in censorship issues that restrict its proper testing, and this makes the choice of a liberal secretary of vital concern. The secretary is, however, separated from meaning, which she pursues nor peruses.

If the encoder is a discreet girl, then who is the receiver? Shannon figures the receiver as the one who reconstructs backwards the messages from the signal, but the destination is the persons (or thing) for whom the message is intended. The receiver is not the destination. The receiver is another telegraph girl or an operator-technician low in the hierarchy who then gives the message to her superiors or customers. The model of communication is subject, then, to meta-modeling operations around gender and chain of command or at least a service environment.

Lets return to the technical problem of noise, which would be analogous to indiscretion. What is to be done about noise in the channel? How does one combat this chance variable? The issue is formulated this way: the received signal E is a function of the transmitted signal S and the variable N , so that $E=f(S, N)$. The Shannon and Weaver solution is to situate an auxiliary observer in the communication model. This observer-device surveys what is sent and received, noting the errors, and transmitting data about them over a correction channel so that the receiver can make the corrections; correction is a clean up operation, a secretarial function. In-between the information source and the transmitter, the original message

branches off and upward toward an observation device, back to which flows corrections concerning the received message from the receiver; but from the observation device flows forward correction data past the receiver and the received message to a correcting device that sends the repaired message to its destination. This is cumbersome solution. Not only is another channel required, but it doesn't eliminate noise, even though it reduces it considerably, still leaving an arbitrarily small fraction of errors. Other ways of battling noise include various uses of redundancy; sending the same message many times and determining the probability of errors; understanding the redundancy at the source at the destination as well (in telegraphy, despite the clipped nature of its syntax, the redundancy of the English nature remains and has to be accounted for in some manner.)

We should not be surprised by the quantitative nature of the solutions attempted in the form of surveillance devices that introduction of new input (about errors) that brings the identity of the message sent and received closer together. This is the military solution to communication. It makes little difference whether it was the Battle of Britain the test of the automatic anti-aircraft system or the introduction of the VHF radio in U.S. tanks courtesy of the Bell Labs or the secretarial scene of gendered encoding and decoding practices in a model that does not openly reveal its command structure in which the receiver does not enjoy the same weight as the destination (rather, it is the secretary who inputs the corrections and her employer to whom messages are ultimately directed), the mathematical model of communication is far from value neutral or even a technical problem strictly speaking.

In the end, engineering and ideological issues turn out to be not as far apart as they appeared at first glance.

Discussion

Why telegraphy? My hypothesis is that the social scene of decoding at the telegraphy table influenced the formulation of problems and solutions in the mathematical model of communication. Telegraphy is a gendered technology in the sense developed in the analysis of the example in the lecture, especially after the 1870s in the US when women broke into the hitherto boy culture. Prior to this time, as one of Thomas Edison's biographers reminds us, tramp telegraphers such as the young Edison drifted from city to city in search of work and established friendships with operators down the line whose signature "touch" of their keys was known to those sensitive enough to hear (see Paul Israel's *Edison: A Life of Invention*, New York: John Wiley & Sons, 1998, p. 22). Of course, socializing during down periods would often take place from table to table in a given office. The telegraphic scene of decoding on an individual level influences the formulation of problems and solutions around specific practices. There were basically two ways to receive a message: listening to the short intervals (dots) and long intervals (dashes) between clicks and writing out the message in long-hand; or a decoding practice assisted by the registration on paper of the dots and dashes, which would be then translated and written out long-hand for the recipient. The double-scene of decoding, without or with a step of paper registration, would require the operator to translate the Morse code and then deliver the message; the final destination being someone other than the operator (this suggests the social inequality of the position of the operator in a service economy, and Edison was fired more than a few times in the 1860s for various reasons). A certain level of proficiency is presupposed here (that is, in terms of words-per-minute) but more important was the general knowledge that an operator could bring to fill in the inevitable gaps in the message (Edison was constantly consuming newspapers for precisely this reason). The

channel of the telegraphy was filled with all sorts of noise fluctuating currents, leakages, etc. The notion of operator discretion must also be considered in its most general rather than moralistic sense because the scene of telegraphic decoding often involved discretionary interpretation even if, in the end, this simply meant informed guesswork that in the end faithfully reproduced the original encoded message (which could be confirmed easily in the case of news stories).