

Executive Registry
42-6371a

12 December 1972

MEMORANDUM FOR THE RECORD

SUBJECT: The Upper-Lower Case Case

1. The advantages in data handling of all electric communications have been illustrated in many ways. Not least of them is the disappearance or diminution to trivial status of the data input problem and the consequent availability of all information in machine language for processing.

2. The purpose of this paper is to expose some potential reactions of consumers, i.e., ultimate readers of communications, to what they may see from the new system. Unless a change is made, all of our communications will be stored and retrieved in upper case. All of our texts stored in the new [redacted] will be in upper case, except that generated at Headquarters in ATS or similar systems.

3. MY ESTIMATE IS THAT THE REACTION OF READERS WILL BE NEGATIVE WHEN THEY REALIZE WHAT HAS HAPPENED. OC SAYS THAT WHITE HOUSE-BOUND MESSAGES ARE NOW RE-TYPED. COMMUNICATIONS IN CAPITAL LETTERS ARE UNACCEPTABLE THERE.

4. THERE MAY BE SOME DISPOSITION TO FOB OFF ADVERSE REACTION TO UPPER CASE AND TO DISCOUNT CRITICISM OF YET ANOTHER WAY IN WHICH COMPUTERS DICTATE TO HUMAN BEINGS. BEFORE ADOPTING THIS APPROACH, ONE SHOULD RECALL THE REASONS FOR OUR PREDICAMENT AND SEE IF THEY ARE STILL VALID, FOR, IF THEY ARE NOT, IT MIGHT BEHOVEE US TO MAKE OUR PRINTED OUTPUT MORE SALABLE.

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5. THE TROUBLE MAY BE TRACED TO J. M. EMILE BAUDOT WHO INVENTED THE TELETYPE SYSTEM IN 1874 USING A 5 ELEMENT CODE THAT PERMITTED AUTOMATIC TRANSMISSION OF THE ALPHABET. SINCE 1877 HIS CODE HAS BEEN WIDELY USED FOR RADIO AND CABLE TRANSMISSIONS. THIS CODE IS SEVERELY LIMITED IN THE NUMBER OF CHARACTERS IT CAN REPRESENT. SOME OF THE CODES ARE RESTRICTED TO FUNCTIONS SUCH AS SHIFT UP AND DOWN, SPACE, CARRIAGE RETURN, TAB, AND "ALL BLANK" WITH 26 CODES USED FOR PRINTED CHARACTERS.

6. THERE ARE MANY REASONS THAT HAVE MADE FORWARD THINKING COMMUNICATORS WANT TO CHANGE FROM THE 5 LEVEL BAUDOT CODE TO A 7 OR 8 LEVEL CODE WHICH WOULD NOT ONLY PERMIT EXPANDED CHARACTER SETS BUT REDUNDANCY CHECKS FOR IMPROVING ACCURACY. ALTHOUGH THE DESIRABILITY OF SUCH A CHANGE HAS BEEN RECOGNIZED FOR 30 YEARS, AT LEAST, THE TEDIOUS TASK OF NEGOTIATING INTERNATIONAL AGREEMENTS FOR CHANGE AS WELL AS THE GIGANTIC COSTS FOR CONVERSION OF EQUIPMENT IMPOSE NEARLY INSUPERABLE OBSTACLES. NO ONE WHO MUST USE INTERNATIONAL CIRCUITS EXTENSIVELY DARES DEPART FROM A 5 LEVEL CODE UNILATERALLY.

7. IF THE AGENCY'S COMMUNICATIONS WERE INDEPENDENT OF COMMERCIAL LINKS AND IF IT WERE POSSIBLE FOR THE AGENCY TO HAVE EXCLUSIVE USE OF A SATELLITE SYSTEM, IT MIGHT BE FEASIBLE TO USE AN EXPANDED CODE THAT WOULD PERMIT BOTH REDUNDANCY CHECKING AND UPPER AND LOWER CASE PRINTING.

8. IT IS NOT ONLY IN COMMUNICATIONS THAT WE HAVE AN INTELLIGIBILITY PROBLEM. UNTIL RATHER RECENTLY OUR COMPUTERS PRINTED OUT ONLY UPPER CASE. NOW WE CAN HAVE LOWER CASE, TOO, IF WE PAY THE PRICE OF SOMEWHAT SLOWER PRINTING (500, INSTEAD OF 1,000 LINES A MINUTE). COMPUTERS HAVE BEEN LIMITED, NOT BY CHARACTER CODES--THEY HAVE LONG USED 8 BIT BYTES--BUT BY A TRADITION OF UPPER CASE PRINTING WHICH HUNG OVER FROM THE CODE LIMITATIONS OF PUNCHED CARDS AND PRINTING SYSTEMS IN WHICH THE SIZE OF THE TYPE BAR OR PRINTING WHEEL WAS PROPORTIONAL TO THE NUMBER OF CHARACTERS OR WHERE THE MODE OF PRINTING, E.G., BY WIRES INHIBITED THE VARIETY OF INTELLIGIBLE CHARACTERS REASONABLY POSSIBLE.

9. On the assumption that readers of documents much prefer upper-lower case presentation and that intelligibility of the text would be much improved by such presentation, let us consider what can be done without entailing a departure from the 5 level Baudot code for communications.

10. An editing routine on incoming texts could be devised that would use certain characters (codes) for control to upper case. For example, a period would always be followed by one upper case letter; an asterisk before and after proper name would cause the capitalization of all intervening words; a number sign would be followed by capitals until the next occurrence of a number sign, etc.

11. Except for the period, these symbols require special insertion by the originator or by the communications system. It seems unrealistic to impose such a requirement on the originator. It would, however, be feasible to make the insertion of such symbols an automatic function, say of the Automated Field Terminal (AFT), as normal typing is converted to the communications code.

12. Let us suppose that future communications will be prepared by normal typing and that no re-typing will be necessary for communications. Either a device such as a cassette will record the typing electrically for input to AFT or some sort of optical character reader (OCR) will scan the typed texts. In such cases the AFT could be programmed to insert the special characters required.

13. Now that upper and lower case would be stored in the computers, other consequences for processing would abound. Visual Display Units (VDU's) now used will NOT show lower case. New policies would have to consider the problem of mixed files and whether, in converting lower to upper case, provision for return to lower case should be made. The CS would need a new COM equipment as the present one will not handle lower case characters.

25X1 14. As we approach consideration of a proposal for an all magnetic [redacted] it seems most desirable to face the upper-lower case case squarely. Customer reactions to upper case only will be less troublesome now than after thousands of documents are stored in capitals only.

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